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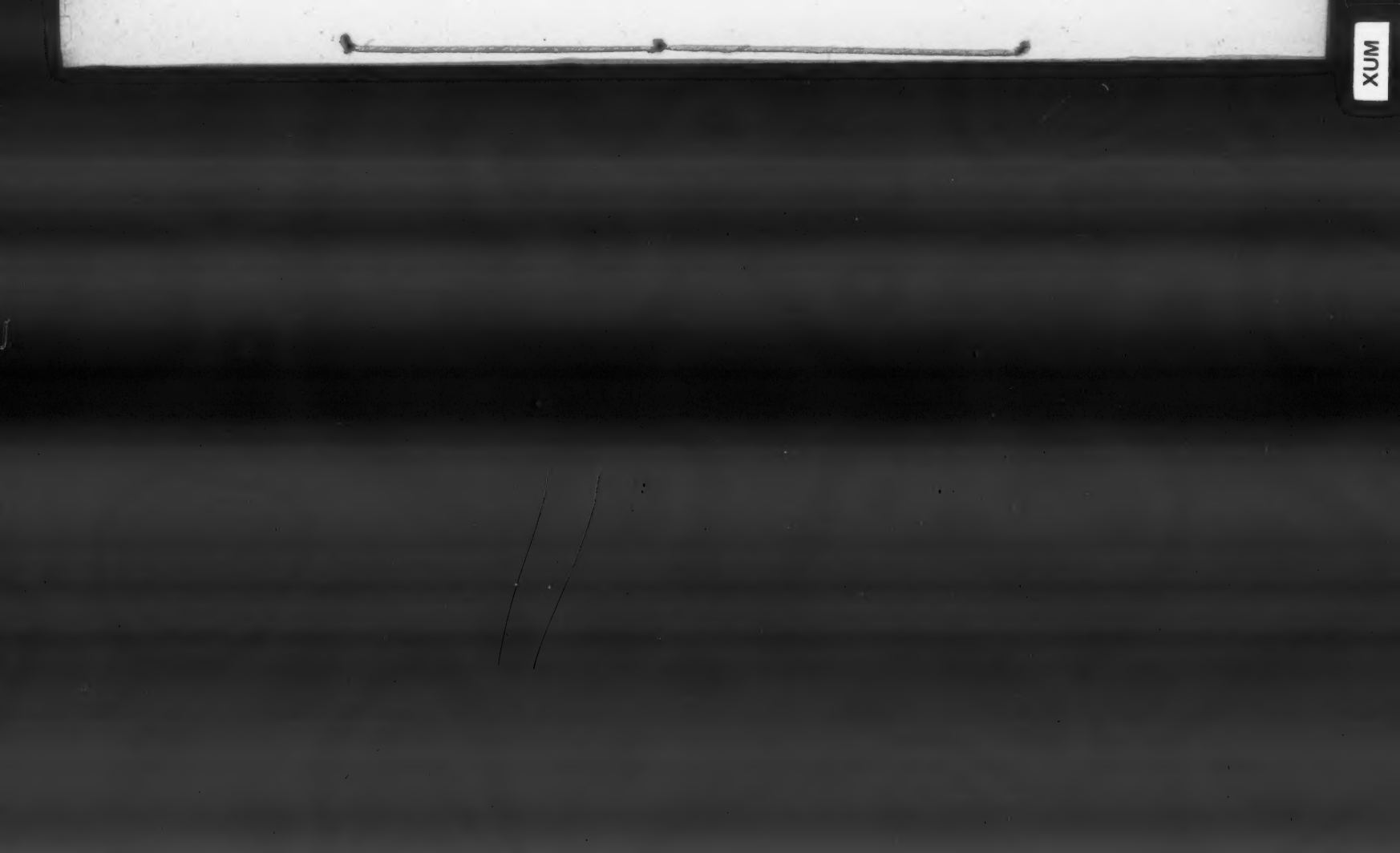

OHIO

MEDICAL AND SURGICAL JOURNAL.

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ORIGINAL COMMUNICATIONS.

ART. I.—*A Contribution to the Study of Hog Cholera.* By N. S. TOWNSHEND, M.D., Professor of Agriculture in the Ohio Agricultural and Mechanical College. Read before the Columbus Academy of Medicine, November 23, 1877.

Mr. President: An invitation from the Columbus Academy of Medicine to read a paper on the disease familiarly known as Hog Cholera, should be accepted as proof that physicians of this city are not indifferent to the malady which so seriously affects the prosperity of the surrounding country. It also affords evidence that physicians are not wanting in a humane desire to alleviate the sufferings of the creatures we subordinate to our pleasure or profit. It may be presumed that the members of the Academy are aware of the resemblances between some animal diseases and those which affect mankind; and of the facilities which animals afford for the study of such diseases. The communicability of some diseases from animals to men is equally well-known to you, as well as the influence which the diseases of milk and flesh-producing animals may have upon the health of the people. Permit me to add, that in a country where well-educated veterinarians are very scarce, there would seem to be a necessity that physicians should care not only for the families of their patrons, but also for their four-footed dependants.

I regret that what I have to offer this evening is only "A Contribution to the Study of Hog Cholera," instead of an exhaustive treatment of the subject. My opportunities for investigation have been limited, and have occupied only such time as could be spared from the pressure of other duties. I have observed somewhat hastily several affected herds of swine, and examined the bodies of some fifty, supposed to have been subjects of this disease, several of which were killed in order to determine what structural changes were discoverable in the earlier stages. I have not had sufficient opportunity to test the comparative efficacy of different modes of treatment.

History.—So far as I am informed, a serious and often fatal disease of swine, known as Hog Cholera, has been more or less prevalent in Ohio for twenty years. Whether this disease is identical with any disease of swine of former periods or of other countries, is a question to which it may be presumed that sufficient attention has not been given, inasmuch as widely diverse opinions are entertained. Of late years the disease has presented itself in almost every State of the Union; but especially in States West and South. The report of the Department of Agriculture for 1876 shows a loss in the State of Missouri of 30 per cent. of all the swine in the State; in the States of Illinois and Kentucky the loss was more than 20 per cent.; in Indiana 18 per cent.; in Georgia 10 per cent., and in Ohio 7 per cent. The aggregate loss of the whole country was twenty millions of dollars.

Symptoms.—The first stage of the disease is congestive; the animal crawls under the litter, or huddles close to his companions, refuses solid food and appears sluggish; this stage may last a few hours or it may continue for a day or two. If the animal does not die apoplectic in the congestive state, reaction follows; then there is thirst, feverishness, and redness of the skin, especially where the hairy covering is least abundant. In some animals this redness is diffused, but

more frequently it appears in spots, from which the cuticle is sometimes raised in small blisters; the conjunctiva is reddened and the mouth is dry. The pulse is from 100 to 120, and the temperature from 104° to 106°; and in one instance I found it as high as 111°. Soon the abdomen becomes tumid and tender, the animal expresses great pain when compelled to move, and prefers to lie prone upon the belly. There is often great difficulty of breathing, which is more or less spasmodic, and attended with severe cough; not unfrequently there is hemorrhage from the nostrils and swelling of the parotid glands. Through the febrile, or acute inflammatory stage, there is constipation, which is afterwards followed by diarrhœa; at first the evacuations may be destitute of bile, then billious, and very soon dark colored, or blood-stained and very fœtid. Finally, locomotion becomes difficult, unsteady, and perhaps spasmodic, or the posterior extremities are entirely paralyzed. Death may occur within a few hours and during the congestive stage as already stated; it may occur in a few days from the effects of inflammation, or in one or two weeks from exhaustion, from peritonitis, or from effusion.

Post mortem:—On examination after death, the cavity of the abdomen is often found to contain a few ounces of serum, and sometimes fibrinous exudations. The liver is not materially changed in size or texture, but often has a yellowish or ashy color; occasionally it was found greatly engorged. The spleen was enlarged in nearly half the cases examined, sometimes to a great extent, and so disorganized that when the capsule was ruptured the grumous contents would escape. This disorganized condition of the spleen, as might be expected, was greatest when the blood showed most change.

The stomach often contained undigested food, the mucous membrane was usually congested, but rarely showed as decided evidence of inflammation as other portions of the ali-

mentary canal. The small intestines, on their external surface presented patches of deep discoloration, occasionally they would be glued together by lymphy exudations. The mucous lining showed general congestion, and inflammation in patches; sometimes tumefaction and exudation would be almost confined to the aggregate and solitary glands, while in some cases where covered by dark colored crusts or where these had sloughed off, patches of ulceration were seen. Frequently, however, the inflammation and ulceration affected glandular and other portions indifferently; or the whole inner surface of the bowel would be inflamed for several inches in extent. In the large intestines the mischief was still more apparent, the cæcum often contained a multitude of inflamed and elevated spots, or in their place ulcerations as large as the impressions made by the ends of one's fingers on a dusty table, and as close as the fingers held together could make them. The colon usually presented ulcerations similar to those of the cæcum; its contents were small masses of hardened faces dark colored or blood stained; and not unfrequently dark fluid blood in considerable quantity. Sometimes portions of the colon were almost gangrenous, in a few cases the intestine had been perforated by ulceration and peritonitis had resulted. The mesenteric glands were almost always enlarged; the kidneys were congested, the bladder contained healthy looking urine, or it was tinged with bile or blood.

The lungs were always congested and often inflamed, or impervious to air from serous infiltrations; the air-passages were filled with frothy mucous, the trachea, and larynx were sometimes found in a state bordering upon gangrene. In a few instances, where the cough had been an unusually marked symptom, the smaller air-passages were crowded with nematoid or thread-like worms, the *strongylus paradoxus*, these cases were so few, that the presence of the lungworms can only be regarded as an accidental complication.

Effusion within the pleura, or pericardium, was sometimes seen; the blood in the heart cavities was clotted, but the clots were soft and in general the blood elsewhere was fluid. On examination of the blood with the microscope, the blood-globules appeared shrunken and their margins irregular. In the blood drawn from some animals that were killed, bacteria were seen with a power of from eighty to one hundred diameters. The *Bacilla anthracis* which is said to be pathognomonic of anthrax fever was looked for but not found. The brain and spinal marrow were repeatedly examined but without disclosing any marked lesion.

Pathology.—That this disease corresponds in no degree with Asiatic cholera of the human subject, is evident on slight examination. In Hog Cholera, constipation is much more common at the outset than diarrhœa, and afterwards when diarrhœa is present, the evacuations are unlike the characteristic discharges of Asiatic cholera. That the disease is an idiopathic fever of typhoid type, substantially like typhoid fever of the human subject, would seem to be proved by the congestion, inflammation and ulceration so generally found in the intestinal canal, by the frequency of hemorrhages from the bowels, and the frequent enlargement of the mesenteric glands and spleen; also by the petechial eruption over the surface, and from its greater tendency to attack young animals. On the other hand, Hog Cholera resembles what is known in Europe as anthrax fever, the symptoms in the living animal being almost identical, and the post mortem appearances not greatly dissimilar. Hog Cholera differs from what are styled anthracoid diseases by its much less malignity; and, although in my opinion it is contagious so far as to be communicated in some way from diseased to healthy swine, it does not appear to be transmissable to other species of animals, nor to man, while the anthrax fever of Europe passes readily from one kind of stock to another and is often fatally

communicated to mankind. The blood of animals suffering from anthrax fever, it is said, always contains the *Bacillus anthracis.* So far as my examinations have gone or my information extends, the presence of *Bacillus* has not been demonstrated in Hog Cholera. I should add, however, that many European veterinarians regard what is styled anthrax fever of swine as nothing more nor less than typhoid fever. By some persons Hog Cholera is regarded as typhus, rather than typhoid fever; but the frequency of intestinal lesions, and severe suffering in Hog Cholera, are adverse to such a conclusion.

Cause.—First, contagion. It seems to be established that this disease has been communicated to healthy swine by bringing them in contact with the affected, or by confining them in cars, pens, or yards, that diseased animals have recently occupied. It appears, also, that the contagion may, in some way, be conveyed for the distance of half a mile or more; also, that animals kept in the most cleanly and thrifty condition are not proof against the contagion. If the disease is typhoid fever, we should expect to find that contaminated water is a principal medium through which the disease germs pass from one animal to another. How far exemption from attack may be secured, when the food and drink are free from all possible contamination, has not, so far as I know, been determined. Second. It seems, also, to be established that healthy hogs, if subjected to hard driving for considerable distances in hot weather, or if crowded together in large numbers, may develope the disease *de novo;* and, possibly, other conditions and circumstances not yet understood, may tend to a similar result.

Treatment. With this malady it is especially true that prevention is better than cure; the attempt to medicate a case of Hog Cholera, when, by so doing, there might be danger of exposing other animals, is the reverse of economy. When it is certain that an animal has this disease, it should

be killed immediately and buried, and the whole premises thoroughly disinfected. For this purpose, all litter and rubbish should be burned, and the pens, or styes, fumigated with burning sulphur. Hogs that have been in contact with sick ones may be expected to show symptoms of the disease, after thirteen or fourteen days, at furthest, if the weather be cold; if the weather should be very hot, the period of incubation may be shortened to three or four days. During the period of incubation, sulphur should daily be given with the food, or the hyposulphite of soda may be used instead. This is a cheap drug, and a sufficient quantity will be taken, without objection, if dissolved in the drink. Some farmers think they have kept off the disease, after exposure, by acidulating all the food slightly with sulphuric acid; others believe that the sulphate of iron is equally effectual. The carbolic, cresylic, and salycilic acids may prove better disinfectants than those already named; or, possibly, change of quarters may be more beneficial than any plan of medication. If an attack of the disease cannot be prevented, and loss of appetite, with nausea, and constipation, are noticed, then laxatives are clearly indicated, and sulphur enough to act may easily be given with the food or drink, or castor oil, with spirits of turpentine, may be administered to an animal that is conveniently small, and repeated, from time to time, so long as enteric inflammation continues. Corn, boiled in weak lye from wood ashes, is relied upon by some, while others place soft soap where the sick animals will take it, instinctively, to relieve the acidity of the stomach and bowels, from which all seem to suffer. After the disease has run its course, and left the animal without appetite, and with an exhausting and fœtid diarrhœa, the sulphate of iron answers a good purpose, combining tonic with astringent effects. How far such treatment would prove effectual, if intelligently followed, I am not prepared to say. I have several times been thanked for

suggesting such a course by owners who believed it had been of great service.

There are many patent remedies for this disease before the public; they are all published in the Official Gazette of the Patent Office. Some of these remedies contain valuable articles, though not unfrequently the drugs combined are incompatible. A receipt to prevent, and to cure, and to be given in all stages and conditions, you would think more likely to do harm than good. Certainly you would have little faith in any specific that might be offered for the prevention and cure of typhoid fever of the human subject, although you would expect to see a large majority of your patients thus afflicted, recover under treatment properly adapted to their condition.

Mr. President, I am fully aware that the paper I have just read is very unsatisfactory; there are but few points upon which I have been able to speak with absolute certainty. My object will be attained if, in consequence of any discussion that may follow, this disease should hereafter be better understood and more successfully treated.

ART. II.—*Nerve-Stretching; its Physiological Action.* By ISAAC OTT, M. D., late Demonstrator of Physiology, University of Pennsylvania.

As every one knows, nerves possess elasticity, and can be stretched to a considerable extent. Harlers and Haber, in 1858, and Valentin, in 1864, have shown that the excitability of the nerve trunk became changed under the influence of powerful mechanical action. These experiments have been confirmed by Tutschek and Conrad. Dr. S. W. Mitchell discovered on frogs and mammals, that the nerve bore best a slow stretching by a weight. When the nerve was suddenly stretched, there was a loss of function. When the nerve had been stretched one-fifth, slight mechanical injuries ceased to cause reaction, but electrical irritation caused contraction, till the stretching was equal to three-

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fourths of an inch in three inches. Vogt has lately published a monograph on nerve-stretching, and as it has become a method of treatment in sciatica, neuralgia, and tetanus, I thought it worth the time to study the physiological effect of stretching on a normal nerve. I shall study only the effect of strong stretching in this paper, as injuries of nerves.

Harlers has shown that weak stretching increases the irritability. The rate of conductivity was also studied in nerves greatly stretched.

My experiments were performed on frogs, and the weakest induction current that would cause muscular contraction was used to measure the excitability of the nerve. Between the testings, the frog was placed in the moist chamber.

The figures show the distance between the spirals.

Exp. 1. Frog, cerebrum ablated, tissues of posterior extremities divided, excepting the sciatics; the femorals ligated at their central extremity to prevent hemorrhage; the left sciatic stretched from eleven millimetres to twenty-five, and kept so.

Time.	R. Sciatic.	L. Sciatic.
1.45 P. M.	23.5	8.
1.48 "	20.	6.2
1.54 "	19.	3.5
2. "	19.	3.

Exp. 2. Frog, cerebrum ablated; posterior extremities divided, excepting the sciatics; femoral arteries ligated at central end; left sciatic stretched from eight millimetres to seventeen, and kept so extended.

Time.	L. Sciatic.	R. Sciatic.
2.20 P. M.	25.	36.
2.25 "	20.	28.
2.32 "	16.	32.

As will be seen by an examination of the columns of figures, the excitability of the stretched nerve diminishes rapidly. To eliminate any action on the central nervous system, it was destroyed in the next experiment.

Exp. 3. Frog, central nervous system destroyed; tissues of posterior extremities, excepting the sciatics, divided.

Time.	L. Sciatic.	R. Sciatic.
2.10 P. M.	27.	25.5
2.25 "	Left sciatic stretched from ten millimetres to twenty-six and then allowed to recede on itself.	
2 30 "	14.5	26.3
2.37 "	13.5	27.5
3.14 "	15.	21 5
3.35 "	17.5	27.5
3.45 "	12.7	24.
4.00 "	12.2	34.

The destruction of the central nervous system did not prevent the diminution of the excitability of the stretched nerve.

All action on the central nervous system from stretching was eliminated. Now, the seat of this loss of nerve excitability, must be either in the nerve trunk, or its terminal extremity. That stretching has an effect on the extremities of a nerve is evidenced by the muscular twitchings which ensue, but that the whole cause of the reduced irritability is due to peripheral stretching of the nerve, is not probable. Further, when the nerve is irritated near the muscle, and, at a distance from it, the conductivity of the nerve between those points is lessened. I mean, here, that the transmission of nerve force has diminished rapidly. It is to be inferred that the loss of irritability is seated in the nerve trunk itself. The question arises here, How does it lessen the irritability? Does it disturb the molecules of the nerve, or is it due to the dilated and tortuous-nutrient blood-vessels of the nerve produced by stretching, causing a slowing of the rapidity of the circulation, lessened arterial tension, and, consequently, diminished metamorphosis of tissue, followed by altered function?

To show that disarrangement of the molecules causes a loss of irritability, the next experiment is given.

Exp. 4. Frog, central nervous system destroyed, tissues of posterior extremities divided, excepting the sciatics.

Time.	L. Sciatic.	R. Sciatic.
2.10 P. M.	29.5	31.4
2.15 "	Fifty gramme weight on left sciatic for thirty seconds.	
2.18 "	59.	29.
2.24 "	37.	31.2
2.46 "	18.4	31.4
3.0 "	19.7	30.7
3.56 "	11.2	26.

Here pressure primarily elevated the irritability, but was succeeded by a fall, showing that displacement of the normal arrangement of the nerve-molecules will cause a fall of irritability. Certainly, where the femorals were ligated, or divided, there were no changes in the nutrient arteries to produce the decreased irritability.

That stretching lowers the rate of transmission of nerve-force, and that extra polar katelectrotonus, also, in the stretched nerve lowers still more the rapidity, I will simply state here as a preliminary communication.

ACTION ON REFLEX-ACTION.

Exp. 5. Frog, at 3.0 P.M., had his cerebrum ablated.

3.15 P.M., right foot dipped in sulphuric acid sol.

Reflex-time, 7, metronome beating one hundred beats per second.

3.17 P.M., right sciatic stretched about a centimeter.

3.18 P.M., pinching the right foot produced no reaction.

3.21 P.M., 11; 3.25, 13; 3.40, 13; 4.7, 23; 4.25, 19.

Here the conduction of sensory impressions in right leg was temporarily lost, as well as motility for pinching of the right foot produced no reaction for a short time in the left or right leg. At length, reflex action returned to the right extremity, although greatly diminished, probably due to lessened conductivity and the irritation of the nerve in the act of stretching, calling into action the spinal inhibitory centres,* which depress reflex excitability.

Exp. 6. Frog, at 2.46 P.M., had cerebrum ablated.

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* Phil. Med. Times, Dec., 1877.

Time.		Reflex-time.
3.8	P.M. Right foot tested.	11
3.9	" Left sciatic stretched.	
3.10	"	11
3.16	"	13
3.20	"	14
3.38	"	13
3.47	"	16

This experiment demonstrates that stretching the left sciatic had little or no action on the reflex actions of the right foot. From this, it is inferred that stretching has no influence on the central nervous systsm.

The following resume expresses the conclusions at which I have arrived:

1. Nerve-stretching lowers the excitability of the nerve.
2. This lessened excitability of the nerve is due to a displacement of the nerve-molecules.
3. The seat of this disarrangement of the molecules is located in the trunk of the nerve.
4. Stretching a nerve has no influence on the central nervous system.
5. Stretching lowers the rate of transmission of nerve-force.
6. Extra polar katelectrotonus, as in normal nerve, also lowers the rapidity of transmission of nerve-force in a stretched nerve.

ART. III.—*Thoracentesis.* By J. H. POOLEY, M.D., of Dobbs' Ferry, N. Y. Read before the Yonkers Medical Association.

The subject I wish to bring before the association to-night is one of great interest and importance, for none of us know how soon we may be called upon to decide its merits in our own practice—paracentesis thoracis—by aspiration or incision. Perhaps no operation has, of late years, engaged the careful study and thoughtful consideration of the profession more than this. In looking over the literature of this matter, it is difficult to say with whom this treatment orig-

inated. But no one who has seen many cases of effusion into the chest, and knowing the want of success that so often follows the usual medical means used for its relief, but must have felt a strong desire to relieve his patient in some more reliable way. In some cases, this surgical proceedure is the great desideratum, and, as I think, destined to be acknowledged of vast use and importance. It has been suggested at different times, by various writers, but was left apparently for Bowditch, of Boston, clearly to point out and justify as a sensible and reliable operation. In speaking of this malady, Niemeyer says: "Considering our slender ability to excite or even to hasten reabsorption of pleuritic effusions, by means of internal medication, the discovery that their evacuation by surgical means is attended by much less danger than was formerly supposed, and the frequent and early practice of such operations in cases of pleurisy with effusion, must be considered an important advance in therapeutics. It must be evident that every additional day, during which the lung is exposed to pressure, and the longer the time allowed for cells to multiply in the exudation, so much the more are the chances of complete recovery diminished, and the danger of a fatal termination increased. Regarding the precise indications for the procedure of tapping and for its various modifications, as regards the details of the operation, we refer to the handbooks of surgery." Dr. Flint, Sr., remarks on this subject: "Cases are often injudiciously treated in consequence of the attention being too much engrossed with the measures to promote absorption. These measures will do harm if continued too long or pushed too far. After a certain amount of effect has been produced, if they cease to be further effective, they should be discontinued, at least for a time; nor should they be persisted in if they fail to have any effect. Harm is produced by their injudicious employment, in proportion as they debilitate." Now the case requires tonic

remedies, nutritious alimentation, the moderate use of alcoholic stimulants, and gentle exercise out of doors. These measures are always important, and they are preëminently so if, from associated affections, complications, or the general condition of the patient, the powers of the system are notably lowered. I have repeatedly seen a marked change for the better occur at once, followed by progressive improvement in all respects, on the discontinuance of measures having reference to the absorption of liquid, and the substitution of measures addressed to the system. Numerous quotations from different authorities might be given, of the uncertainty of diuretics and hydragogues, in the removal of the effused liquid, but I now proceed to advocate surgical interference when medicines fail to give satisfactory results. The propriety of paracentesis or thoracentesis when the accumulation of fluid is sufficient to place the patient in imminent danger, is unquestionable. But it is a question which, of late, has been much discussed, whether it be not advisable to puncture in cases in which the chest is dilated by liquid, although the patient be not in great distress or danger. It is clearly an object to get rid of the liquid, and the point to be decided is whether it be better to resort to the direct mode; that is, puncture and withdraw it, or to effect the object indirectly by purgatives, diuretics, &c. This point is to be decided, of course, after a mature consideration of the advantages and disadvantages of the operation of thoracentesis. Heretofore, this was performed only as a dernier resort, under circumstances when little was to be expected from any measure. It was deferred as long as possible, sometimes on account of doubt as to diagnosis, and, because the perforation and introduction of air was supposed to involve danger of an increase of inflammation. Objection to the operation on the score of diagnosis is now removed by our present knowledge of physical signs. Moreover, the operation has been divested of all severity, and the liability

to the introduction of air has been provided against, by the application of the suction-pump, first suggested by Dr. Morill Wyman, in 1850, and since employed in a large number of cases by Dr. Bowditch. The introduction of air is not attended by the injurious effects formerly apprehended, but it is objectionable, because the presence of air is an obstacle to the full expansion of the lung after the liquid is removed. Its introduction is prevented by the use of the pump in withdrawing the liquid. The operation is rendered trivial because, with the suction force of the pump, a small exploring trocar suffices for the puncture, which causes very little pain, and closes directly the canula is removed. Dr. Bowditch operated in this way on 75 persons in the course of twelve years. In no instance was any permanent injury referable to the operation. It was in some cases repeated several times during the progress of the disease. In 29 of the 75 cases, recovery appeared to be attributable to the operation. Immediate and great relief was obtained in cases which ultimately proved fatal. Dr. B. has been led by his experience to operate in all cases in which the quantity of liquid induces either permanent or occasional dyspnœa of a severe character, and in all cases in which the pleural cavity is filled if, after a reasonable amount of treatment, otherwise the liquid does not diminish. Flint has told me that he can testify to the innocuousness of the operation when carefully done, and the relief which it affords, and its value as a means of rescuing patients from a condition of imminent danger to life.

Further, the conclusions of Bowditch, as just stated, are not only sustained by his large experience, but are consonant with common sense. If, by an operation trivial with respect to pain or any evil effects, and easily performed, the liquid effusion may be withdrawn at pleasure, this mode is certainly to be preferred to measures which are indirect, not very reliable, requiring considerable time, and producing

more or less disturbance of the system, and debility. An important advantage of the operation is, the liquid being removed before the lung has been subjected to long pressure, and has become adherent by dense layers of lymph, or, perhaps, organized tissue, the expansion takes place more fully, and is followed by less deformity of the chest from contraction of the affected side. The conclusions drawn by Bowditch from the data afforded by his large experience, with respect to the character of the fluid withdrawn, and its influence on the prognosis, are of practical importance. A sanguinolent fluid, at the first puncture, denotes the existence of malignant disease of the lungs or pleura, and, consequently, the case will end fatally. A case presenting a mixture of bloody, purulent fluid, at the first operation, is usually fatal. A fétid, gangrenous fluid is very rare; it denotes gangrene, and the case will end fatally. In all such cases, the operation may afford great relief, and prolong life.

I now proceed to notice the second form of operation—viz., by incision. This is done for empyema, pyothorax, or suppurative pleuritis. These names denote a variety of pleuritis, characterized by the accumulation, in the pleural cavity, of purulent fluid. The term empyema only expresses the existence of pus, without indicating its situation. Pyothorax is a better name, but this does not express the existence of inflammation. Suppurative pleuritis is a simple title suggested as more fully expressive of the affection. It is not necessary for me, here, to go into the clinical history of this disease. Suffice it to say, the pathological character is suppurative—acute, or sub-acute inflammation being the cause. A positive diagonsis, perhaps, may be made in cases in which spontaneous perforation of the chest does not occur, or, without waiting for the occurrence of this event, a small exploring trochar may be introduced into the chest, and a few drops of the liquid withdrawn; the gross and microscopical characters of the specimen thus ob-

tained will at once settle the question. This procedure is warrantable as a means of diagnosis in view of the bearing on the prognosis and treatment. Indeed, the operation is so slight as to be in no wise objectionable. In both the cases on which I operated by incision, the relief was immediate —one made a quick and perfect recovery, the other succumbed from secondary cau es. The greatest objection to incision has been the fear of admiting air into the pleural cavity, and thereby increasing the inflammation, independent of the effect on the suppuration. In my experience, this has been exaggerated, and, in future, I shall never delay the operation on this account. I opened the chest of my first patient about thirteen years ago. He fell under my care after an acute attack of pleuro-pneumonia, from which he very imperfectly recovered, having a cough remaining, with some dyspnœa, for nearly five months. He gradually grew worse, but his former attendant opposed surgical interference, until his great emaciation and shortness of breath demanded it. I made the opening in the intercostal space on the left side, below the nipple, evacuating six or seven pints of fetid pus; it kept flowing during the next day. I then washed it out with carbolic acid freely, and for the patient ordered quinine and iron, with generous diet. He sank in about a week from inflammation of the right lung, followed by gangrene.

Autopsy.—The heart pushed much towards the right side; the left lung greatly compressed and nearly solid; the right lung far advanced in mortification; some enlargement of liver and spleen, with extreme general emaciation.

The other case occurred in a boy, about six years old, and is related in the Medical Record for August 4, 1877.

I will now read a very important quotation bearing on this subject, from the last annual report of the Boston City Hospital. The "Treatment of Empyema by Permanent Openings with Cases," is the title of an article by John G. Blake, M.D., which advocates, as the title suggests, free and early incision in the treatment of pyothorax as soon as the presence of pus is determined, and subsequent washing of the pleural cavity by antiseptic injections when the discharge is offensive. He reports one case, occurring in a boy, where empyema was cured by simple tapping, there being no reaccumulation of pus, and says: "A sufficient number of favorable results in children has been reported to justify postponement of the incision until repeated withdrawal of the pus fail to effect a cure. In adults the rule is to remove the pus at once by tapping, and, on its reaccumulation, to make the permanent opening. I am tolerably well satisfied that it is better to avoid unnecessary delay, and that, where pus is found in large quantities, operation by incision should be resorted to immediately.

The details of nineteen cases of pyothorax treated by free opening are given, ten of which entirely recovered, five were much relieved, three died under treatment, and one died from causes entirely disconnected from the operation or the disease. Local anæsthesia by ether-spray, or salt and ice, is preferred to full etherization. The period of treatment in the successful cases varied widely from forty-four days to six months, and one of those reported "relieved" had been operated upon, and remained under treatment three hundred and fourteen days, and was slowly improving at the date of the report.

ORIGINAL LECTURES.

CLINICAL LECTURES ON SURGERY DELIVERED AT STARLING MEDICAL COLLEGE, COLUMBUS, O. BY J. H. POOLEY, M.D., PROF. OF SURGERY.

LECTURE II.

Hydrocele.

The patient before you, Mr. S——, aet. 38, a native of the United States, and a plasterer by occupation, is afflicted with the very common surgical malady known as hydrocele of the tunica vaginales testis, a disease to which I propose to direct your attention this morning.

But before doing so I will first mention, and briefly comment upon, a somewhat unusual circumstance in this patient's history. It is this.

Four years ago he first noticed this hydrocele, which is on the right side; it grew slowly but steadily, until it hung half way down his thigh, and he had to have allowance made for it in the construction of his pantaloons. Such was his condition, and such had it been for some time, when on April 18, 1877, he fell from a step ladder, a distance of about six feet, striking upon his side and shoulder. He is quite sure he did not strike or hurt his scrotum in any way, and he felt no pain there at all.

He went home and lay down, feeling rather bruised and shaken by his fall, and about an hour and a half after the accident on feeling for his hydrocele, to his surprise it was not to be found, or at least a wonderful change had taken place in it.

The swelling was diminished more than one half in size,

it had lost its definite outline and tension, and instead of the familiar, hard, globular enlargement of the right side, there was a general, soft, boggy swelling of the scrotum. He was very much alarmed by this state of things, unnecessarily, of course, and sent for his physician, who never having seen or heard of anything of the kind before, and not knowing exactly what to make of it, brought him to me for opinion and advice. I saw him April 20th; the scrotum was then very nearly of the natural size, with its integument very much thickened and corrugated, both testicles plainly felt in their natural situation and free from swelling or tenderness.

There was considerable ecchymosis; indeed the scrotum was almost as black as a negro's, and this discoloration extended, though in a minor degree over the penis, and up for a considerable distance on the right inguinal region. He was free from pain or inconvenience of any kind; his anxiety was dissipated; all he wanted was an explanation of his curious adventure, and opinion as to the probable result. The explanation was not difficult; there could be no doubt that he had ruptured his tense hydrocele sac by the mere concussion of his fall; its contents had been discharge into the loose meshes of the neighboring connective tissue, and before I saw him, completely absorbed, whereas, the accompanying blood, or its coloring matter at least, had not.

Never having seen a case of this kind before, and not being well prepared to give an opinion, I confidently told him that his hydrocele would not come back; in other words that he was permanently cured. But the result has not verified my prediction, for in about three months from the time of the accident the sac began slowly to refill, and now, nine months afterwards, is about as large as ever, and presents all the ordinary characteristics of a hydrocele.

The accidental rupture of the sac of a hydrocele is quite a rare event, and does, in the majority of instances, though

not in all, as we have evidence before us, result in a permanent cure of the disease. I mentioned this case soon after it happened, at a meeting of the Columbus Academy of Medicine, when Dr. N. S. Townshend, of the Ohio Agricultural and Mechanical College, who was present, related the following, as having occurred in his practice many years before:

A man, who had a large hydrocele, was chopping wood, with the handle of the ax between his legs, and while thus engaged, he struck his scrotum a severe blow either with the axe-handle, or his doubled fist; he could not tell which. He suffered severe pain; the tumor almost instantly lost its defined character, and soon disappeared entirely. There was considerable echymosis of the scrotum, penis, and groin, which lasted a long time. The cure in the case was permanent, as the man was under observation ten years afterwards, and there was no return.

Percival Pott records the following case: "A middle-aged man showed me a hydrocele of the vaginal tunic, which had been near two years collecting, but from which the water had never been drawn. I advised him to have it done soon, and he fixed on the next morning. On his way home he got fuddled; fell down into the area of an empty house, and, in his fall, struck his scrotum against a piece of scaffolding. In the morning early he sent for me. I found him in bed, with a great echymosis under the skin of the scrotum, which was much swollen, and very painful. I would have persuaded him to have permitted me to let the water out, (thinking, thereby, to have taken off part of the tension), but he would not consent; and I was obliged to have recourse to fomentation, cataplasm, etc.

"In about a fortnight, all the echymosis was dissipated, and all the swelling from the sound side of the scrotum; and both the patient and myself thought that the tumor from the hydrocele was considerably less than it was before

the accident. By persisting in the same method, for about three weeks more. the whole of it disappeared, nor has returned since. Nor have I, ever since, seen the same attempt succeed."

In this case the cure was remarkably slow and tedious, the absorption of the fluid after accidental rupture generally taking place in a few days. Mr. Bransby Cooper, in his Lectures on Surgery, mentions the following: "A gentleman consulted me who had been the subject of hydrocele for two years, and had twice submitted to evacuation of the fluid by surgical operation. The fluid had, however, again accumulated; but, on the day before he applied to me, he had run against a post, and struck the scrotum. This had produced considerable inflammation, but no sign of the bursting of the tunica vaginalis. I ordered antiphlogistic remedies, and recommended that he should remain in a recumbent posture. This led not only to the relief of the inflammatory action, but, to my great surprise, the fluid became absorbed, and the hydrocele was permanently cured."

Notwithstanding Mr. Cooper's opinion to the contrary, we cannot help thinking there may have been a rupture of the sac in this case.

Sir Astley Cooper, to whom we may confidently look for information on almost any subject connected with surgery, says: "Hydrocele is not always cured by a blow which tears the tunica vaginalis. I once attended a gentleman who consulted me for a hydrocele; and who, while riding in the neighborhood of Gibralter, was thrown upon the pommel of his saddle, and received a severe blow on the scrotum. The hydrocele, in a few hours, disappeared; but, in six months, again formed and was, he thought, as large as before. I injected it about two years after the above accident." Sir Benjamin Brodie relates a case of a hydrocele ruptured and cured by an accidental blow. Mention is also

made, on what authority I know not, of the sac having been ruptured by coughing, with a similar result.

And, finally, several cases are on record in which hydrocele, in the adult, has disappeared spontaneously, without any blow, rupture of the sac, or anything of the kind. This, which, in children, is common enough, as we shall presently see, is very rare in the adult.

But I think the most curious and interesting history on record of its kind is the following, which I quote from the Ohio Medical Recorder, November, 1877:

"Mr. A. C. T., aged forty-five, a resident of Belmont county, Ohio, gave the following unique history: About five years ago he observed a swelling which seemed to involve the left testicle. It gradually increased in size until it was as large as the largest cocoanut, and was very hard. One day, in 1873, in the harvest field, he happened to put his hand to the parts, when this hard mass was gone, and in its place was a soft diffuse swelling, involving the prepuce, the covering of the penis, the walls of the scrotum, etc. It was not attended by any uneasiness whatever, and did not deter him from proceeding with his work. In like manner, in February following; then in September, 1876, and again, in August, 1877, the same occurrence was repeated. Within a few days after each of these ruptures, these soft swellings pretty much disappeared, leaving the parts highly colored for five or six days, and the tunica vaginalis apparently empty. Since the last rupture, the sac has refilled quite slowly. The patient thinks its present size, although it is more than two months, is only about one-third its full size; yet, on tapping, eighteen ounces of fluid of a dark grumous color was removed. The testicle being healthy, two ounces of a fluid, consisting of equal parts of water and tincture of iodine, were thrown into the sac, and allowed to remain a few minutes, and then drained away."

Though we have spent so much time over the subject of

rupture of the sac by violence, or otherwise, which our case suggested, we have still some time left to devote to the general subject of hydrocele, to which accordingly I now invite your attention.

The word hydrocele is formed by the combination of two Greek words, and means literally a watery tumor, or a tumor containing a watery fluid. Accordingly, we hear and read of hydroceles of the neck, referring to certain peculiar cysts of that region, a use of the word which I deprecate as confusing to the mind, preferring to confine the term to serous collections in the region of the scrotum, testicle, or spermatic cord. Even when thus limited it includes numerous species, such as hydrocele of the testis, encysted or diffused hydrocele of the cord, congenital hydrocele, etc. But when the term hydrocele is made use of simply and without any qualifying word, it is understood to mean a collection of serous fluid in the closed sac of the tunica vaginalis testis. To this commonest form of the disease, this hydrocele *par excellence*, so to speak, we shall devote our attention at this time, leaving its varieties and complications for a future occasion. Hydrocele, then, we may define as follows: an accumulation of fluid in the tunica vaginalis testis, producing a pyriform, fluctuating, and generally a translucent swelling in the scrotum.

It is a very common disease, more so in tropical countries than elsewhere. If we except the years of infancy and early childhood, when, however, it is generally of the variety known as congenital, not that it exists at birth, but for the same reason that certain hernial are called congenital, viz: because it exists with an unclosed communication between the tunica vaginalis and the peritoneal cavity—it is more frequent in advanced periods of life.

It occurs generally on one side only of the scrotum, and about as often on one side as the other. Sometimes, how-

ever, it is found on both sides at once, constituting a double hydrocele.

Ordinarily the sac of a hydrocele, consisting as it does simply of the distended tunica vaginalis, is single, and pyriform in shape, gradually diminishing in size from below upwards, and ending at the external ring in a well-marked constriction. Some interesting variations from these characteristics are occasionally noticed; it is sometimes quite globular, sometimes cylindrical, sometimes lobulated by the formation of pouch-like diverticuli from the main sac, sometimes hour-glass in shape from constriction, about the middle of the sac, the portions above and below the constricted part at times completely cut off from each other, so as to constitute really two sacs, but generally communicant by an opening more or less ample. Though, as remarked, the sac of an hydrocele generally terminates abruptly at the external ring, instances have been reported where it has been prolonged upwards into the abdominal cavity without communicating with the peritonæum; and this occult hydrocele has been found to contain nearly as much fluid as the external one, and sometimes to be separated from it. At times the hydrocele cavity is traversed by bands or trabeculæ, stretching across it from side to side. All these variations in the form of the sac are quite rare, the rule of its pyriform shape, with the base downward, being all but universal.

The sac is generally quite thin, being composed of the distended tunica vaginalis, and this with the tenuity of the overstretched scrotal integument, whose wrinkles are all obliterated, leads to one of its most characteristic features and one extremely valuable for diagnostic purposes, namely its power of transmitting light. The longer an hydrocele exists, as a rule, the thicker does its sac become, till in some cases it is a very tough, fibrinous resisting membrane. Calcareous deposits in isolated plates sometime take place upon its inner surface; and these have, in some cases, extended by

coalescence over the whole sac until it has become a solid, calcareous shell—a sort of earthenware jug.

The testicle is generally situated at the posterior and upper part of the tumor, out of harm's way, but sometimes for reasons that have never been satisfactorily explained, it is found in front; this fact, as we shall have occasion to remark further on, is one of practical importance. In ordinary hydrocele, the testicle is generally quite healthy, and remains unaffected by its unusual surroundings, being neither larger nor smaller than its fellow.

The fluid of an hydrocele, as you have repeatedly witnessed in this clinic, is a clear, transparent, amber or straw colored fluid, and, as I have demonstrated to you, by heating it in a test-tube in your presence, highly albuminous. Its specific gravity is about 1.025, and it contains, in addition to albumen and other organic matters, a small proportion of salts.

I have never witnessed any remarkable variations in this fluid, having never seen anything more unusual than a few curds or flakes of lymph floating about in it. But it does sometimes vary very widely from its ordinary and well known appearance. It is sometimes dark colored, brown, greenish, blood stained, and so on; sometimes thick and greasy, or gelatinous; sometimes grumous, or like coffee grounds. At times, and it is said especially in old people, shining scales of cholesterin may be seen sparkling and scintillating in it in great numbers.

More rarely there have been discharged from a hydrocele bodies like the false or movable cartilages sometimes found in large joints, and these have been seen not only loose, but also hanging by long attenuated pedicles to the walls of the sac, showing that they are produced somewhat in the same way here that they are in the articulations.

Hydroceles vary very much in size, which is best expressed and appreciated, by the measurement of the con-

tained fluid, the quantity of which is often very extraordinary. One thing has invariably struck me in tapping an hydrocele, and that is that the quantity of fluid has always seemed much greater than might have been expected from the size of the tumor. The average of such hydroceles as I have seen would certainly be as high as ten or twelve ounces, though twice this is not very unusual. It sometimes amounts to several pints. Mr. Butcher, of Dublin, mentions having withdrawn 1½ pints on one occasion. But even this is nothing compared to the enormous collection in the scrotum of Gibbon, the celebrated historian, from which Mr. Cline drew off the astounding quantity of six quarts. This is, I believe, the largest hydrocele on record. A Mr. Davey, practising, I think, at the time, in Ceylon, mentions, though in somewhat ambiguous terms, a very large one.

He relates in the British Medical Journal, 1857, page 593, that he tapped an enormous hydrocele, hardly smaller than the body of a robust child, and removed a wash-hand basin full of serous fluid. There is a delightful uncertainty as to the amount of astonishment one ought to feel at his oriental narrative, for the bodies of children, even robust children, and even robust Ceylonese children may, one should think, differ very considerably in size.

If the case is not unique, certainly the comparison is.

Hydrocele is essentially a chronic disease, which may last for many years, or a whole life time, without having, as a rule, any tendency to recovery, or to do any harm beyond the growing inconvenience of its slowly increasing bulk. It seems to originate in an accumulation of the natural secretion of the part, determined by loss of balance between the secerning and absorbing functions, generally without any inflammatory complications. Its cause is involved in obscurity, and generally none is known to the patient. Occasionally it has been attributed to blows or other injuries, but even in cases supposed to have been thus caused, much

doubt remains. Prof. Geddings, of South Carolina, says that it is generally caused by inflammation of the urethra, but so far as I know, he is the only author who makes the statement. He brings forward no facts to substantiate it, and with all due respect to him, I believe it to be utterly without foundation.

The diagnosis of hydrocele is not difficult, and yet mistakes with regard to it are so frequently made, that I need offer no apology for dwelling upon it at considerable length. The affections for which hydrocele is most liable to be mistaken, are hernia, varicocele, hæmatocele, and various enlargements of the testicle. The most common error is that of confounding it with hernia, and I may mention here, as a matter of curiosity, that the very nomenclature of the disease has been tainted with this confusion, for it is called by many of the common people, and in some of the old surgical treaties, water rupture, and by the Germans, by the exactly equivalent term, *wasser-bruch*. The following are the main diagnostic differences between hydrocele and hernia:

In hydrocele, the swelling begins at the bottom of the scrotum and ascends toward the external ring, and is more or less distinctly pyriform in shape, variations in this respect, as already stated, being very rare. In hernia, the swelling commences above and diminishes as it extends, being smaller at its lower part. The common hydrocele of adults, to which alone this lecture relates, is a permanent swelling, uninfluenced by position or manipulation. Hernia (except when irreducible) recedes when the patient lies down, or may be made to do so by manipulation, or taxis, as it is called, and returns when he assumes the erect position, or the pressure is removed. The tumor of hydrocele is dull on percussion; a hernia is resonant, if not over its entire surface, generally, at least, in some part thereof, for it generally contains some intestine. In hydrocele, there is more or less sensation of fluctuation, and no impulse communi-

cated to the fingers on the patient's coughing; hernia does not fluctuate, and does give an impulse when the patient coughs. In hernia, the swelling is opaque, and does not transmit light or become translucent, when examined with artificial light, whereas an hydrocele does. This symptom is so important and peculiar, that we must dwell on it for a moment. Its presence is proof positive in favor of hydrocele, although its absence is not decisive against it. It may fail to be present from dark color or turbidity of the fluid, or extreme thickness of the sac, but in the immense majority of hydroceles it is present to a more or less marked degree. In seeking to elicit this sign, the patient should be taken into a darkened room, and while the tumor is grasped with the left hand, in such a way as to put the parts upon the stretch, a light is placed behind it, as near as may be without burning the patient, and shading the front of the scrotum with the right hand, the light may be seen shining through. Sometimes we may assist ourselves by looking through some tube, such, for instance, as a piece of stiff paper, rolled up into a hollow cylinder. Another plan is to have the patient lying upon a table, in a convenient position, and while making the examination, the head of the examiner may be covered with a shawl, or screen of dark cloth, after the fashion of the photographer when looking through his camera, at his waiting victim.

Finally, in cases of doubt, it is allowable to puncture the swelling with a fine exploring needle or tracar, which will settle the question.

The diagnosis from varicocele, cannot be difficult when we remember the following points in which it differs from hydrocele. Varicocele presents an irregular surface, and feels like a coil of earth worms under the skin; it slowly disappears when the patient maintains for some time a recumbent position, and is generally the seat of a dull, dragging pain, at least when of a considerable size.

Hæmatocele follows immediately upon an injury, and

soon attains its maximum development; the fluid effused is dark colored, hence the tumor is without translucency, and there is frequently superficial ecchymosis about the scrotum.

Enlargement of the testicle will often occasion great perplexity, and demand great care in the examination. Common orchitis, with its hard, heavy, painful tumor, can scarcely do so, but encephaloid, sarcomatous, and other growths m y be very difficult of discrimination. For their proper appreciation we have only to remember and carefully apply the distinctive symptoms of hydrocele, and, in cases of doubt, resort to the exploring needle. This is all the more necessary and proper from the fact that these diseases are often complicated, with the effusion of more or less fluid into the tunica vaginalis. The prognosis of hydrocele, as already intimated, presents nothing of importance for our consideration; it does not threaten life, it does not cause severe pain; it simply remains as a permanent inconvenience, liable to increase indefinitely, and with greater or less rapidity.

We come, now, to the most important part of our subject, viz., the treatment. Having diagnosticated, and prognosticated, like wise and learned men, what can we do to cure our patient?

The treatment of hydrocele is divided into the palliative, and the radical. By the first we simply alleviate for a time our patient's condition, by the latter we remove the disease and prevent its return. The palliative treatment consists in evacuating the contents of the tumor, from time to time as may be necessary, and thus keeping our patient in a condition of tolerable comfort. The operation of tapping an hydrocele may be done with a lancet or bistoury, but is very seldom so performed, a trocar and canula being generally used as most suitable and convenient. A medium sized or rather small instrument should be made use of.

Some surgeons prefer to make a little preliminary incis-

ion through the integument, but this is unnecesary unless you are aware from previous experience, or otherwise, that you have to do with a very thick or tough sac. Ordinarily the trocar may be used without the preliminary incision, and in the following manner. The scrotum is grasped and put upon the stretch by the left hand, and the trocar, its point having been dipped into sweet oil, is thrust perpendicularly through the various coverings of the hydrocele at its lower and anterior part, avoiding any superficial veins that may be present, and the testicle, whose situation has previously been made out, and as soon as the instrument is felt to have entered, its direction is changed, and it is passed on obliquely upward, the trocar withdrawn, and the fluid evacuated through the canula.

After tapping, the hydrocele, sometimes, though rarely, does not refill, but is permanently cured.

Much more frequently however, indeed as a general rule, it fills up again in the course of a few months, and must be again emptied, and the operation has to be repeated at varying and uncertain intervals as long as the patient lives.

Such is what is called the paliative treatment or tapping of hydrocele, and I think you will find quite a number of persons who will prefer it to any more radical treatment; indeed, in the aged, feeble, excessively timid, especially those who are in easy circumstances, I do not think it worth while to recommend any other. Dr. John Mason Warren said: "As a general rule, I have found that the wealthier classes in life prefer the palliative operation of tapping. The laboring classes, who are more inconvenienced by it in their vocations, prefer the radical cure." And in this, according to my experience, he was quite correct.

Simple as is the operation of tapping a hydrocele, there are one or two points about it worthy of attention. First, always, if possible, ascertain the exact position of the testicle before proceeding. As already said, this is generally at

the upper and back part of the sac, but it may be in front. A slight prick of the testicle will not do any serious harm, but it gives unnecessary pain, which is always unsurgical and to be avoided; should it be in front, however, and unrecognized, you might thrust your trocar quite through it, or, wounding it deeply, still fail to reach the fluid, much to your patient's disadvantage, and your own disgrace.

Above all, never tap an hydrocele when in a state of active irritation or inflammation; to do so is very dangerous and may result most disastrously. I could cite several cases where tapping, under such circumstances, has led to a fatal result.

The radical cure of hydrocele has for its object either the obliteration of the sac, or such a change in its lining membrane as shall prevent a re-accumulation of the fluid. For this purpose there have been quite a number of operations proposed and practiced from time to time.

Before proceeding to speak of these, I will just mention, as mere curiosity, and for your delectation, one or two old ideas on the subject of the treatment of hydrocele. Dr. James, an English writer of 1745, and very old-fashioned, even for that time, says that the best remedy in new-born infants is for a man in good health and fasting, to chew some nutmeg, and breathe often, every day for some time, upon the affected scrotum.

He adds, "I the more readily recommend this, as I have frequently seen the good effect of it. In the mean time, we do not despise the holding spirit of wine in the mouth, and at the same time breathing upon the scrotum."

Marini, an Italian surgeon, forbids any operation to be performed while the sun is in scorpio, which he says will protract the cure.

Among the operations for the radical cure of hydrocele, we may mention incision, excision, caustic, seton, suture, and injections of various kinds. The operation by incision

is an old one. It consists in laying the sac freely open, by a long anterior incision, after which the older surgeons introduced into the cavity some irritant material, such as the red oxide of mercury. This part of the proceeding is now omitted, the sac being simply filled with dry lint, and allowed to fill up with granulations.

This mode of treatment is unnecessarily severe, and should be reserved for such cases as prove rebellious to milder methods, which, however, will not be very numerous. There are two cases on record, in old numbers of the Lancet, of the cure of hydrocele by the accidental incision of the sac, which, I think, are interesting enough to be worth recital:

A French naval surgeon says: "On board of our ship, while in Toulon Roads, was one Napoleon Agostini, a Corsican by birth, who had on the left side an enormous hydrocele, which he refused to have operated on. He had been allowed to go ashore, where, with some of his shipmates, he entered a cabaret, where he stayed drinking for some hours. Having all got intoxicated, they quarreled and fought, and one of the men made a blow at Agostini with a knife, by which his trousers were cut from below the waistband, half way down the thigh. An incision, about an inch and a quarter in length had been made in the scrotum, which not only suffered the fluid but the testicle also to escape. Next day, before the effects of his drunkenness had disappeared, the man was brought on board. The testicle was cleaned, returned into its proper situation, and retained there by four sutures. Moderate adhesive inflammation was set up, and the wound had healed by the fourteenth day. Three months have elapsed and the hydrocele has not returned." The other case is given in the following words by P. Ingram, surgeon: "The account of the cure of a hydrocele by a stab, in the Lancet, of last week, reminded me of a similar occurrence, which took place when I was in Calcutta, in 1835. A Sepoy, in a state of infoxication, repaired to the

Soba Bazaar to purchase a pumulo, a species of fruit similar to an orange, but generally about six times larger. The Hindoo, who kept the shop, very quietly informed the Sepoy that he had sold all his fruit of that description, and, of course, could not, at that time, supply him with one.

"The Sepoy became quarrelsome, and the Hindoo, in his turn, quarreled with the Sepoy, stoutly denying that he had any pumulos in his possession.

"The enraged Sepoy then made a thrust with his bayonet at the Hindoo's langooty, (a handkerchief used for the purpose of concealing and supporting the scrotum, similar to a suspensory bandage), swearing that he had one concealed there; when, to the surprise of all present, the shop of the Hindoo was immediately inundated with water. The bayonet had perforated a very large hydrocele. The Sepoy was immediately taken into custody, and after he became sober, expected nothing less than hanging for murder, but he was only slightly punished, and the Hindoo had the happiness, sometime afterwards, of thanking the Sepoy for removing his pumulo, alias curing his hydrocele."

In the operation by excision, not only is the sac laid open, but a portion of it, more or less extensive, laid hold of by forceps, and dissected away. As far as I know, this operation is never performed at present. The cure by caustic consists simply in removing a portion of the anterior wall of the scrotum and sac, by the application of caustic potash, or some other powerful estharcotic; it must be both a painful and tedious process, and is justly abandoned.

The seton was first mentioned as a means of curing hydrocele by Guido di Cauliaco, in 1498.

In modern times the celebrated English surgeon, Mr. Percival Pott, preferred it to every other means, until the latter part of his career, when he adopted the method by injection, which he had previously spoken of in terms of strong disapprobation. I shall not stop to describe the method of in-

troducing the seton, as it is now seldom, if ever, used. Various forms and substances have been recommended, among others a loop of silver or iron wire left in the scrotum for a certain time, but this does not seem to possess any real advantage over the more ordinary materials. The objection to the seton is that it often produces a very high and unmanageable degree of inflammation, and death has even taken place from this cause. Dr. J. Mason Warren reports that in one case where he employed the seton it led to a very severe hemorrhage. The celebrated Ricord, of Paris, at one time used a plan, which I have called suture, but which may, perhaps, be looked upon as a modification of the seton. He passed double threads, or ligatures, through the scrotum antero posteriorly, and tied the ends before and behind over pieces of bougie, after the manner of the so called quill suture. Ricord, as far as I know, has never had any imitators in this mode of practice.

Of late years the treatment by injections of various kinds has almost entirely superseded every other plan. The first use of injections for the radical cure of hydrocele is attributed to a British army surgeon named Monro, who employed spirits of wine. The method was first brought extensively into notice by Sir James Earl, who published a work on the subject in 1791, and recommended for the purpose wine diluted with one-third part of water. Earl, and those who followed him, injected a sufficient quantity of the irritating fluid to distend the sac to nearly the dimensions it had before the hydrocele fluid was drawn off. It was allowed to remain a few minutes, or until decided pain was produced; it was then allowed to flow out through the trocar; the patient was put to bed, and the resulting inflammation, though quite manageable, was generally sufficient to lead to the desired cure; and the method must be allowed to be an improvement on all that had gone before it. A great variety of fluids were made use of, such as alcohol, wine, cold water,

lime water, solutions of alum, tannin, corrosive sublimate, iodine, sulphate of zinc, and so on. A case is mentioned by Sir Astley Cooper in which milk was injected on the supposition of its being a mild, unirritating fluid; however, very severe inflammation followed, and an abscess in the tunica vaginalis. When an opening was made the milk came out in curds. Spirits of turpentine has also been used, with what result I do not know. Of all the substances recommended for injection by this method, a solution of sulphate of zinc, 3i. to the pint of water, is, in my opinion, decidedly the best. I have used it on several occasions, with complete success. Care is necessary in making these injections that the trocar is kept well in the sac of the tunica vaginalis, and that the fluid is all withdrawn before the trocar is removed. If this be not done, some of the irritating fluid may find its way into the loose areolar tissue of the scrotum, and produce inflammation, or sloughing. I remember a case of the kind in my early practice, which gave me a good deal of uneasiness. From some unlucky movement of the patient, some of the solution of zinc found its way into the scrotal tissues, and a circumscribed slough, about as large as a quarter, took place. This did no harm, but rather made the cure more complete. But it is a disagreable accident, and might have very serious consequences.

In a paper published in the Transactions of the Medical and Physical Society of Calcutta in 1834, and subsequently in a paper read before the London Medico-Chirurgical Society Nov. 1841, published in the Lancet Nov. 20th, 1841; and in another paper in the Lancet for April 30th, 1842, Dr. J. R. Martin, of India, recommended the injection of a small syringeful of a mixture of tincture of iodine 3i and water 3iii which was thrown in and allowed to remain.

Dr. Martin supports his recommendation by the experience of over 2000 cases, with less than one per cent. of failures.

Since these publications the iodine injection has been very generally adopted, and is in favor with the majority of practical surgeons. You have seen it done repeatedly in this clinic, and will therefore be the better able to follow the description of the operation. After the evacuation of the contained fluid, taking care that the canula remains in the sac, so that the fluid is not delivered into the meshes of the areolar tissue, you take a small syringe, the nozzle of which has been previously ascertained to fit closely into your canula, and load it with two or three drachms of the fluid you intend to inject, (I always use the common officinal tincture of iodine, full strength, and see no reason to dilute it, or mix it with any other ingredients,) then slowly throw it in through the canula, having withdrawn which you shake the scrotum or rub its sides together so as to bring the fluid as thoroughly in contact with its interior as possible. Sometimes pretty smart pain is at once occasioned; occasionally it does not come on until some hours later, and now and then, as in the last case we had before us, scarcely any pain is felt, and I have known it to be entirely absent, without compromising the result, which was a perfect cure.

The amount of reaction produced by the injection varies considerably, but seldom requires treatment. If it should do so, rest in the horizontal position, elevation of the scrotum, with the application of warm fomentation, generally suffices. Sometimes the swelling and inflammation subsides very slowly, requiring even weeks for their complete disappearance, but this is unusual. The iodine has been detected in the urine of the patient an hour and a half after the injection.

In cases which resist the iodine treatment, Butcher recommends the introduction, by means of a probe passed through the canula, of a few grains of red oxide of mercury into the sac; another writer, whose name I have forgotten, speaks of the same application, and says that one of his patients was salivated by it.

Unless the circumstances of the patient make it imperative or highly desirable, the hydrocele should be tapped at least once before resorting to the injection for radical cure; for sometimes, as already said, a simple tapping proves curative, though this is a rare event. It has often been taught that injections cure by producing adhesive inflammation and obliteration of the sac, but numerous dissections have proved that so far from being the rule, this very seldom occurs. Exactly how the curative influence is produced is by no means easy to say. Billroth, speaking of iodine injections in hydrarthrosis, says:

"The iodine is deposited in the surface of the membrane and in the endothelium; it remains here for months, at least, and by its presence appears to prevent further secretion. At first there is a strong fluxion with serous exudation, but the serum is again absorbed by the still distended vessels, and subsequently the membrane shrinks to the normal volume by condensation of the connective tissue, which subsequently remains more dense." He goes on to remark as follows: "So we may consider the process of cure as analogous to the similar process in the tunica vaginalis testis in the cure of hydrocele; after injections of iodine in hydrocele, there has been an opportunity of making many examinations, from which the course of cure appears to be as above stated; the shrinkage of the serous membrane, with new formation of endothelium, seems to me to be the final cause of the arrest of the secretion."

When the hydrocele is very large it is not safe to inject it after the first tapping; it should be tapped and allowed to partially refill before the injection is made. By this course of procedure a smaller surface is exposed to the irritant action of the remedy, and the effects are correspondingly less severe.

I may mention here that I once cured an hydrocele merely by moving the trocar about rather roughly in the sac

after evacuating it, but I cannot recommend the plan for your imitation, for the reaction was much more severe than I have ever seen it after iodine injection, indeed quite unpleasantly so.

Several times I have seen hydroceles cured by puncturing the sac in numerous places with a common exploring needle, and allowing the fluid to drain slowly away and to infiltrate the areolar tissue, but this plan is unreliable.

Lately I have seen accounts in the journals of hydroceles almost instantly cured by electrolysis, but we need more experience on this point before we can speak definitely about it.

To sum up under the head of treatment, I would say to you, after a preliminary tapping, and this is imperative if the hydrocele be a large one, inject iodine; if this fail, which will be very seldom, then resort to incision.

But remember that every case of hydrocele does not demand radical treatment. If the patient for any reason prefers the simple palliation of occasional tapping, he should by all means be allowed to have his own way.

CLINICAL RECORDS.

ART. V.—*Charity Hospital, N. Y. Service of* DR. F. N. OTIS. *Operation for Stricture of the Rectum.* Reported by DR. JOSEPH MEYER, House Surgeon.

Mary Stephens, aet. 24; single; native of the United States; occupation, a domestic; admitted to Hospital, Oct. 29th, 1877.

Previous History.—Patient states that she has been healthy until seven years ago, when she contracted on her privates a sore which proved to be a chancre. At the time, patient was put under the influence of mercury and had no noticeable secondary trouble until two years later, when her hair began to fall out and an eruption appeared on her face. Since that time she has suffered from no trouble but the eruption, except a rectal trouble which came on about one year ago.

The eruption on her face at the time of admission to hospital was a tubercular syphilide.

Her rectal trouble, for which one year ago she came to the hospital, proved upon examination to be stricture, for which she was treated for several months with bougies without apparent benefit. An operation was proposed at the time, but the patient objected.

At the time of second admission to hospital (Oct. 29, 1877), patient suffered from a constipated diarrhœa. Her stools were most frequent in the morning and were small and usually tinged with blood. A few weeks previous to admission patient noticed that she had several stools after each meal consisting of fœces and muco pus tinged with blood. They were accompanied with excruciating pain, lasting for some time after passage. She occasionally suffered from accumulation of gas within the intestines which was sometimes sufficient to cause a dyspnœa.

Examination revealed a stricture of rectum extending almost as far as the index finger could reach. This was made up of circular fibrous bands and nodules, thickening the rectal wall, especially anteriorly.

Dr. Otis proposed an operation, which he performed Nov. 14, 1877. Patient's bowels were first emptied by a large injection of oil, soap and water. She was then placed upon her back and etherized. The index finger was introduced a little above the highest stricture and a rectal stricture knife being passed in along the finger, the bands were cut anteriorly, from above downwards. After complete division of all fibrous bands, the finger could easily be passed as far as its length.

There was little hemorrhage at the time of the operation, and this soon stopped without interference.

The after-treatment consisted simply in keeping the bowels confined for three days, by opium and iodoform suppositories. The bowels were then emptied by an injection

of oil, after which iodoform suppositories were introduced. The bowels, from the third day after the operation until the time of cure, were regular and attended by neither pain nor discharge.

An examination of the rectum (Dec. 1st, 1877), showed entire absence of stricture; the mucous membrane appeared thickened but was in other respects normal.

In connection with the above, I may also cite from cases of ulcer of rectum which occurred during the service of Dr. Otis (Charity Hospital, Blackwell's Island), which were benefited by stretching the sphincter.

First Case. Bella J. (aet 21, admitted Oct. 21). The patient had an ulcer of rectum, situated just between the external and internal sphincter (making a sort of reservoir there), and had suffered from three attacks of hemorrhage, losing at each time about four ounces of blood. She also discharged a good deal of purrulent matter tinged with blood. Patient had a good deal of pain at the time of motion, with an occasional attack of diarrhœa.

Second Case. Mary L. (aet 21, admitted Sept. 29). Patient had a rectal ulcer, due to extension of ulceration from mucous patches about the anus.

Third and Fourth Cases. Ellen B., admitted Oct. 1st, and Annie B , admitted Oct. 4th. Chancroidal ulcer of rectum.

The last three cases suffered principally from tenesmus, accompanied by more or less discharge of pus tinged with blood.

All of these were treated in the same way; all were etherized, the sphincter was thoroughly stretched, and the ulcers touched with nitric acid.

The after-treatment consisted, also, as before, in confining the bowels for three days by means of opium and iodoform suppositories; then an injection of oil was administered and suppositories of iodoform (5 grains each, three times a day) until patients were well. At the same time easily digested

food, in small quantities, was given and the bowels were kept epen.

Results: Mary L. was discharged cured three weeks after the operation; Ellen B. two weeks after, and Annie B. four after the operation. Bella J. is well of ulcer of rectum, but is still in the hospital suffering from secondary manifestations of syphilis.

ART. VI.—*Temporary Paralysis of Muscles of Right Side of Face* By C. B. White, M.D., Surgeon U. S. A.

Serg't I. N. H., Jr.; aet. 25 years; single; native of United States; tall, slender, of good habits; by occupation a musician; found himself suddenly unable to blow the cornet, his usual instrument. This happened on October 5, 1877, and was preceded by no premonition, except some twitching of the muscles shutting the right eye, on the day before. He told me he had just before, or some hours before, been practising some difficult music, and when he wished to take part in the garrison concert of October 5, found himself entirely unable to play. There is no history of headache, earache, or other accompanying nervous symptoms; there was not present anæsthesia or numbness of the part, but the right eye remained open and staring, except when pulled shut, and the conjunctiva showed passive congestion, the tongue, when thrust out, bent to the right side, and the buccinator muscle was so affected that he had to put his finger into his mouth while eating, to dislodge the food from the right side, when desirable to change it. This was the condition October 7, when he reported at surgeon's call. Electricity was applied daily, and a pill of extract of nux vomica (gr. $\frac{1}{3}$) and iron by hydrogen (gr. 4) administered three times daily. In ten days he commenced to close the eye by voluntary motion, and in about three weeks he could shape the lips into a position to whistle, but even now (November 2) the aperture thus

made is rather towards the right side, being beyond the median line, and he can not yet hold the wind for an air instrument. The appetite and nutrition have remained good and out-of-door exercise has been enjoined.

The orbicularis palpebrarum muscle was paralyzed, and the other muscles notably affected were the buccinator, levator anguli-ovis, levator labii, superioris; probably others were affected, but the absence of their motion was not obvious. The muscles of deglutition and of the voice did not seem affected. This young man has the peculiarity of having a sort of air chamber, apparently connecting with the fauces or top of the larynx, which he can fill or empty at will. This chamber is more readily filled now that his disabili y is leaving him, than while it was at its height; it is upon the left side of the neck. It has been my lot to observe, previously, two cases in the United States service, almost similar. One, a bugler, taken suddenly with loss of power about the face while learning to blow, subsequently recovered; the other, also a musician, affected by a more extensive loss of power, had not fully recovered when he passed from under observation. The last case appeared more like the result of an embolism.

ART. VII.—*Case of Ovariotomy with Interesting Complications.* By C. W. DUNLAP, M.D., Springfield, Ohio.

DR. POOLEY—*Dear Sir:* I have a case of an operation for ovarian tumor which I wish to report to you, thinking it may be of some interest to you and the profession. Not that there was any new plan adopted in the operation, but the complications during the operation, and more especially in the after-treatment, might be of some interest and benefit to the readers of your journal, (if they take time to read this article.)

Dr. C. E. Beardsly, of Ottawa, Putnam county, Ohio, spoke to me during the last session of the Ohio State Medical

Society, at Put in-Bay, of a case of ovarian tumor he had on hand and asked me if I would go to his place and operate on it. I told him I would, and on Thusday, June 21, 1877, I received a letter from him (Dr. Beardsley) saying the patient would be ready for the operation by Tuesday, June 27, 1877. And I, with Dr. C. E. B. and the other necessary assistance, operated. I had made an examination of the patient before commencing the operation, and I told the physicians present that the adhesions I thought were very extensive. But when I cut through the abdominal walls, into the cavity, I found they were (the adhesions) more than I expected.

But to commence at the first, I made an incision along the median line about four inches in length, down through the abdominal wall: of course, cutting slowly and carefully. When I had made an opening into the cavity, something resembling the intestines came up, completely filling the opening I had made; for a moment I was at a loss to know just what it was or what to do. I made an examination and found, what ever it was, it contained fluid, and would have to be tapped and emptied before it could be replaced; and I made up my mind to tap it, intestine or not. So I plunged my knife into it and let out about a quart of clear looking fluid. Then, on further examination, I could feel the tumor still below what I had already opened. I then enlarged the opening, and found that what I had tapped was a hydatid of the omentum; and that the loose end of the omentum was firmly attached to the front walls of the abdomen, and to the tumor, near the pedicle; I also found twelve or fifteen small hydatids, which I opened, and discharged the contents; and then, after tearing up the attachments of the omentum and ligating the blood vessels that needed the ligature, I came to the tumor proper. I found that it extended upward under the short ribs, and dipped down behind the intestines. It was firmly attached to the lower border of the spleen, and in the lumbar region. It also dipped down and completely

filled Douglas' cul-de-sac, being attached to the whole of it, the adhesions extending to the very fundus of the uterus.

After some difficulty I succeeded in removing the tumor. I neglected to state that in breaking up the adhesions in the lumbar region, I was compelled to ligate one of the mesenteric arteries. Having removed the tumor I dressed the patient and put her to bed.

And as I said before, I write you this letter to report the complications in the after-treatment. I will send you a letter from Dr. C. E. Beardsley, which he wrote to me some time ago, giving me the history of the case before and after I had seen her. With this you will find a letter from Dr. C. E. B.

Yours truly,

C. W. DUNLAP.

OTTAWA, OHIO, *August* 6, 1877.

C. W. DUNLAP—*My Dear Doctor:* To-day I will hastily speak of Mrs. Thompson, and for fear you have not had her age, etc., will commence by saying, she (Mrs. Thompson) is now thirty-four years of age; was operated upon for ovarian tumor on June 26, 1877. The attachments and adhesions to the omentum, bladder, intestines, and uterus, I will not speak of, as you have all down in your notes, no doubt, and will refer to them and give the case full justice.

The third day after the operation she came almost entirely under my control. There seemed to be nothing unusual in the reaction, nor in the case, with one exception, and that was the scanty amount of urine voided, up to the eighth day, when she become somewhat distressed from flatus and tympanites. To relieve this condition, I gave one-half ounce of castor oil; and in four hours gave her an enemata of castile soap suds, which acted nicely, giving remarkable relief. The only medicine given or seemed to me to be necessary, was one-eighth grain mophia given hypodermically, say an ounce in six hours; brandy and food was given as the stomach would bear up, to

this, the eighth day. All day of the eighth, and up to 4 A.M. of the ninth, there was a most exhausting vomiting of a coffee-ground character; and this continued until the bowels were acted upon; during this time I gave her small pieces of ice, and had her swallow them with a few drops of tincture of peppermint. As soon as the bowels were moved, gave her morphia, one-eighth grain, hypodermically. She rested nicely for twenty-four hours, and the vomiting commenced as on the eighth. Ice, brandy, peppermint, etc., all failed to give relief. On the twelfth gave her another one-half ounce of castor oil, assisting the action with the soap-suds injection; and as soon as the bowels acted had the same marked relief as before. From the fourteenth day, she had no more of those vomitings, and seemingly gained hourly. On the eighteenth day, when she became tympanitic, with pain and a sick stomach, with some vomiting, ordered her the usual dose of castor oil as before, assisted with the enemata of soap-suds, and instructed the nurse to give her a teaspoonful of brandy at the time her bowels moved, should she feel much depressed. Her bowels moved early in the morning, and the nurse mistaking a four-ounce vial of carbolic acid, which was used diluted to disinfect the cloths used to dress the abdominal incision with, and gave her a drachm or more of it instead of the brandy ordered, she, the nurse, pouring it in a teacup, guessing at the quantity. As soon as the patient swallowed it, she cried out with pain, and an apparent asphyxia seized her. The cause was almost instantly discovered, and woman-like, she rushed for the cream-crock, and gave her a pint of cream or more, and sent for me, stating what she had done. I hastened to the patient with a stomach-pump, pumped out the stomach's contents, and refilled it with the albumen of a dozen of eggs, and pumped them out; this I repeated several times, and filled the stomach as often with cream from the old nurse's cream-crock. The mouth and throat was entirely cauterized, and looked as white as if it

had been painted with white lead; the parts were perfectly anæsthetized. In two hours the radial pulse were not perceptible, and death seemed imminent by asthenia; however, she rallied in twenty-four hours and seemed quite cheerful. The treatment for some days was small pieces of ice, gum arabic, sub. carb. of bismuth, with morphia, as each were indicated. The ligature did not come away for five weeks; then I applied an elastic cord, so as to tighten and keep the ligatures upon a stretch; they came away in twenty-four hours. She is now entirely well, and will go home to-day.

C. E. BEARDSLEY.

TRANSLATIONS.

Description of a Case of Rabid Hydrophobia Happening Two and a Half Years After the Bite of a Mad Dog. Read before the Academy of Medicine, Paris, by Doctor FEREOL, Physician to the Municipal Hospital of Paris. Translated by BARNARD ELLIS, M.D., Alumnus of the College of Physicians and Surgeons, New York City.

All that which relates to the disease of hydrophobia has the sad privilege of exciting our interest in a high degree, not only on account of the terrific spectacle presented by such a horrible malady, but on account of the numerous questions which arise in general pathology, and in doctrines which arise when we contemplate this strange scourge, so much studied, and so little understood.

The case which I submit for the consideration of the Academy merits, it seems to me, special attention.

The question is, in fact, whether we can attribute to a bite given two and a half years before death the disease which took the patient off in three days.

I am the first to acknowledge all the alarm that such a

question is apt to create, and the unpleasant impression which one is apt to produce by reading it. But the case having been brought before me, I have no right to shun that discussion which the subject requires. Then, what could I do better than to present it to this learned body which contains specially the most competent men in all branches of Biological science, and whose works have already more than once thrown brilliant light upon the pathology of this disease.

Now, I say, at the threshold of this discussion, that it is an extraordinary exception to admit so long a period of incubation. The average duration of time, at the expiration of which a person has the right to believe himself free from inoculation, is, happily, much shorter; the limit of from forty to sixty days being true in most cases.

In so delicate a question, I shall be excused if I do not omit any of the details which I have been able to gather, as the smallest fact may be here of the greatest importance; on it might depend a modification of the diagnosis, and it is for this reason that I have been so particular to give all the facts I was able to gather. I now present to you the clinical notes taken, under my direction, by M. Fourestie, the interne in my service.

CLINICAL NOTES.

On June 18, 1874, at 8.30 o'clock A.M., D——, aged forty-eight years, at the time doctor of medicine and pharmacist, entered the above named hospital. This patient is of a robust constitution; a little above average size; complexion dark brown.

Seated in his bed, his eyes brilliant, and very restless, we are struck at once by his strange air, and wild looks. His answers are short and rapid—his pupils much dilated. He affects to be calm, seeing those around are so, but we feel that he is internally anxious and agitated. He tells us that

he has passed the night in a state of extreme surexcitation, and, not having been able to sleep, has written more than fifty letters. Being willing to give us an idea of his temper, he says he seldom puts himself in a passion, but if he ever did have a quarrel with any one, he would cut them into little pieces. Meanwhile, he pronounces no word incoherently, and answers very clearly to our questions.

He complains of a profound aversion to liquids, an aversion which has already lasted several hours, and he brought several œsophageal bougies for us to try, as he said, to make him drink in spite of himself. He demands an emetic to *clear out the bile* which is suffocating him, and constricting his throat; he also desires a bath, and assures us he will not be afraid to go into the water.

We present to him a mirror, and he turns his head away precipitately, and at the same time is taken with a laryngeal spasm, marked by a catching of the breath (like a man who has been suddenly surprised by a dash of cold water); still he lets us examine his throat with a silver spoon, without manifesting any repulsion. If we present to him a glass to drink from, even empty, he refuses it immediately.

In passing the hand two or three times before his face, so as to disturb the air, we produce a spasm, and the patient recoils with fright. A handkerchief agitated before his face produces the same effect. The fresh air from the window produces disagreeable impressions, and he asks that we shut the door. We present to him a little bottle of ether which he brought, but he cannot support the odor, and begs us to close it immediately. He says he has eaten nothing for two days, and feels weak, but has no appetite. We present him a piece of bread, of which he eats several mouthfuls, slowly, but without satisfaction. He complains of a dry mouth, which, he says, increases the difficulty of swallowing. *He has no sputation.* Dr. Féréol discovers a cicatrix on the dorsal surface of the left hand, at the level of the

second interosseous space. Asking him its origin, he answers rapidly, and without seeming to attach any importance to it, that he had been bitten by a mad dog a long time ago. He tells us that, yesterday, he suffered pain in the left arm, vaguely in all the arm, finally fixing itself principally about the biceps. Let us remark here, once for all, that the cicatrix did not undergo any appreciable change during the course of the disease, and that it was not specially painful.

Our patient has a little trembling of the lips, and the two hands extended, open, show slight oscillations. The tongue is gray and a little pasty; the posterior portion of the pharynx is of a brilliant red, contrasting with the paleness of the palate and of the buccal mucous membrane. No pain on pressure, either upon the larynx or upon the sides of the neck. No hyperesthesia of the skin; on the contrary, he allows us to pinch him very severely without knitting the brows, and says he feels it plainly, but that it gives him no pain; and he adds, with a sort of boasting manner, that he has often seen danger, but that he don't cry easily.

Examination of the chest, discovers a slight pleural friction, sound anteriorly, and on the right side. During this examination, the patient prattles without cessation; is much agitated, and several times slips out of his bed and in again. His features are drawn, his face anxious. At the least noise, he turns his head and beseeches for a little calm. We prescribe an enema of grammes, jv., (about 60 grains) chloral and 12 drops laudanum.

18th June—evening. The day has been calm. The enema was not given till nearly 3 P. M. It has been retained. We are able, by several artifices, (a straw tube in a bottle, covered with willow wicker work) to make the patient swallow a little beef tea, and half a glass of beer; he has eaten several mouthfulls of meat. We offer him cherries, of which he swallows several, but trying to get the pit out of the cherry, caused a slight spasm and fright. M. Féréol

seeing this, stones several cherries for him, and then he swallows without difficulty, excusing himself for the trouble he gave us, and saying that before to-morrow he will have eaten them all.

He says he is perfectly sensible; that he is cured; that he has slept a little; that he shall go to sleep to-night; that to-morrow there will be no trace of his disease, and he will resume his occupations. Nevertheless, he cannot drink at this moment. He takes, without fear, a glass which we offer, containing a little beer; he keeps it a long time, but cannot decide to carry it to his lips; is calm; prattles of things and men; raises the glass to his cheek as if to scratch himself; all this giving him no spasm. But he cannot decide to attempt to drink, and finishes by depositing the glass, saying "this beer is too strong, and what I have already taken has gone to my head."

His pupils are continually much dilated, but on turning them to the light, they contract noticeably. During this conversation, which has been pretty long, and quite calm, the patient appears a little odd and seems rather eccentric; sucking habitually the stone of a prune, or apricot, or date, saying it has been his custom for a long time, because he is sensible that his saliva is thick and prevents him from drinking. He relates to us that he was a student fourteen years, and that at that epoch of his life he frequently drank to excess, especially of wine. He would drink very often five or six bottles of wine, he says, without any inconvenience, but never absinthe, and rarely brandy. Since then, say twenty years, he has been very sober. He never drinks either wine or liquor. He made himself, in his laboratory, with glycose and hops, but without alcohol, a beer, which he says was his only drink. He assures us that he feels very well and that he sees nothing in his state but a nervous surexcitation, which he attributes to his troubles and annoyances, and disappointments in business and friendship, and of which he will be master in a few days.

He says he has patients whom he is attending, and he has not time to be sick.

He adds that, besides, he has already had an attack analogous to this, but he feels this attack is not so severe as that; that it was about a year ago; that he had been to consult Dr. Potain on this subject, but that he did not follow up the inquiry. We prescribe a second enema like the first.

19th June—morning. The injection has not been retained; sleeplessness absolute.

The patient has gotten up several times and taken his clothes, wishing to go out, but was easily convinced by a man whom we had left to watch him, that he ought to lie down and rest tranquilly.

On entering his room at half-past eight A. M., it is easy to see that his condition is singularly aggravated. At the moment when we open the door, the patient jumped up in surprise, and hid himself behind his bed, crying, "Shut! shut the door." His voice choking, stifling. We heard it break between each word. The least gesture near him seems to put him in confusion. Seeing a red handkerchief which he recognized and which he had used yesterday, puts him in a state of unconquerable terror. He implored us for silence and repose. We ask him if he will take a bath. He turns away with terror and says it will be impossible today.

His air is haggard, his physiognomy terrified. The laryngeal spasms have increased in frequency and in intensity; the bile is stuffing him up, he says, and he demands an emetic.

He complains that something has its claws on his throat, and is strangling him; and at the sight of the silver spoon we used yesterday, he recoils with fear and has a spasm. Nevertheless, he insists that we should examine it, and says it will be possible with an iron spoon. With the iron spoon, we press down the tongue without difficulty,

and find the conditions same as yesterday. No sputation. The pupils are still more dilated than on last evening. It is with difficulty that we perceive the iris, forming a circle of extreme tenuity. No cutaneous hyperesthesia, on the contrary, there is an absence of all kinds of pain very pronounced.

It is absolutely impossible to make him take anything; the mere idea causing a spasm and a sensation of unspeakable horror. He has not touched the cherries of last evening, and cannot look at them without fear. The pulse and temperature appear normal; no headache; no localised pain, and only this constriction of the throat, with the idea that he needs an emetic, though he has no nausea, no retching, and not the least cough. We find no more the pleural friction sound which we so plainly heard yesterday. The patient has not been to the water closet. He says he has urinated, but that appears doubtful, as we find no urine, and he has not been seen to urinate. Until the present moment, there has been no furor; only agitation.

Towards 2 o'clock P.M., an attack of fury sets in. He precipitates himself against the doors; he screams out; he complains that he is being strangled, and demands that we bring instantly a priest. At the same time he commences to expectorate. We succeed in getting him to bed, and putting him in a straight-jacket. We inject twice, two thirds grain of chlorhydrate morphine. These injections brought a little repose.

During this fit the patient pronounced no phrase incoherently. He appears to submit blindly to a force which makes him vociferate loudly, and which agitates him, but he is not delirious, scientifically speaking. An instant after giving way to his rage, he asks pardon, excuses himself for all the trouble he has given, assures us he is going to be calm, he will command himself, etc., etc. He is conscious of the gravity of his condition, and asks earnestly that he may

not suffer too much. He wishes us to cover up the mirror of his room, but he cannot bear any longer the sight of a white sheet; and we are obliged to surround the bed with colored curtains.

Towards 9 o'clock P.M., the saliva has returned more abundantly. Each time that he wished to expectorate he warns the attendants not to come near him, as if he had a consciousness that his expectorations would be injurious to them. He again insists upon having an emetic to "clear out the bile which is suffocating him."

Dr. Féréol remarks that very often the sputation is preceded by a special movement. We should say that the effort to vomit was circumscribed by the back part of the throat, without any action of the diaphragm, or any effort of regurgitation. It is in these moments that the patient is agitated the most. He says he wishes to vomit, and asks to be turned on his side, and that we loosen the strings of the "camisole de force," (straight-jacket), so that he can "disembarrass himself of the bile which is choking him to death." He supplicates us in the most humble, and most touching accents, that we take off the straight-jacket which binds him: and invokes with an emphatic exaltation, but not menacingly, the rights of the brotherhood; says he wishes to do harm to nobody; that he knows he is going to die, but he demands instantly that we do not add to his sufferings by keeping him thus bound. Then he speaks of his mother, of whom he is the only support, and upon which he weeps he speaks of his friends, and calls again for the priest. New enema, of morphine 45-100 of a grain.

At 11 o'clock at night, we find the patient very calm, but it is already easy to perceive that he is not conscious of his state. He has urinated in the bed. He hardly recognizes us. His respiration is heavy and slightly stertorous; he expectorates at each instant without trying to avoid the persons around the bed. We are told that he has had a

violent access, during which he has cried, "Thieves! Murder!" Another enema, morphine 30-100 grain. After our visit, he had two more fits; he broke the cords which confined his legs, and struggled violently. The patient did not succumb suddenly, but after having labored for breath for a quarter of an hour, died at 3 o'clock A.M.

Such is the picture, perhaps a little faint, of the disease which was unfolded under our eyes. We will now give such information as we were able to get from several members of his family.

D—— has twice had typhoid fever, once in his youth, and the second time in 1860, (thirty-four years old.) This last sickness was the only one we could confirm, and was very grave. In December last he had the influenza; but, aside from sore throat, which he seems to have had frequently, he enjoyed habitually excellent health. During his long course of study, devoted successively to medicine and to pharmacy, he is said to have imposed upon himself many privations. Without any resources, he paid for his lectures by working as conductor of a locomotive. Since then he has preserved a gloomy and little expansive temper. Most of his relations and friends have described him as a man very calm, and very peaceable; still, one of his friends said he had seen him several times dreadfully angry. Endowed with great energy, he has saved the lives of several persons under diverse circumstances. He was named "Knight de la Legion d'Honneur," for his brilliant conduct during the siege of Paris. The folks around him assured us that, so far from having drinking habits, he led an extremely sober life.

The patient told me, (but he was then already at the beginning of the period of excitement,) that during the fourteen years of his study he drank enormously; but no one has been found to certify to the fact; on the contrary his relations all deny it. They have affirmed, separately, that he never had any attack of acute mania, and that if he had

sometimes a singular and quarrelsome temper, with some oddities such as old bachelors have, never could any of his acts be taxed as folly. We found no trace of mental alienation in his family.

D. told us he had been bitten by a mad bitch. The accident occurred in December, 1871, two and a half years ago. It was long and deep, and thus took a long time to heal. Two other persons were bitten by the same bitch, but our patient was bitten first. The other persons and himself were bitten several times and at several days apart. Our patient cauterized his own and the wounds of the two others, but we do not know if it was done immediately. They did not use the actual cautery, but simply ammonia and nitrate of silver.

The two persons bitten have not felt any ill effects from the bite. The bitch was short haired, small, and of no breed. D. found her in a camp during the siege, and he had such an affection for her that he allowed her to have her puppies on his bed.

See the circumstances under which the bite was given: D. had noticed for several days that his bitch was acting strangely, that she snapped at everything she encountered. His pupil in pharmacy, trying to prevent the bitch from tearing something, the animal rushed at him and tried to bite, upon which D. seized it and attempted to whip it, and thus was bitten on the hand. The beast was shut up in a room with food; she refused to eat or drink for four or five days, and had several fits of rage. She tore everything to pieces in the room; a Voltaire arm chair, a bed-spread, etc., etc. At the end of this time D. decided to get rid of the dog, and poisoned her with some drops of hydrocyanic acid mixed in some vitriol.

The autopsy was made by a veterinary surgeon, who declared that the dog died of "rabies canina." They told us besides, that this bitch for some time previous to the biting

of D., had licked constantly with her tongue the only one of her puppies which was left alive.

This puppy, three weeks old at death of mother, showed signs three weeks afterwards analogous to those of his parent. He refused food, springing with furor upon those who approached him. He succeeded in biting one of the persons who had already been bitten by his mother, and in the same place. The new wound was immediately cauterized with ammonia. This puppy died soon after, at the foot of the bed where he was chained. Before death he was also seen by a veterinary surgeon who affirmed that he presented all the signs of rabies. Finally, Madame X. says she has a little bitch who had been bitten by D.'s dog, but who has never shown any rabid symptoms—yet it is proper to add that this dog has long, thick hair, which may account for his not having been infected. She probably was not bitten at all, but only rolled over by the rabid dog. Be that as it may, the accident of December, 1871, had so pre-occupied the mind of our patient, that his disposition had become very sombre. He had frequent discussions with his friends upon the subject of hydrophobia, and endeavored to prove to them that there was no such disease; yet, happening to make the least bit of a scratch on the scar, he immediately cauterized it with ammonia and nitrate of silver; asked to attend one of his nieces who had been made sick through fright from a dog, a lively sentiment of uneasiness was plainly visible in his features.

Since January his character has become soured to such a degree, that it was noticed by those who approached him that he was no longer sociable; his affection for a little niece whom he much cherished, was almost changed to aversion, but it is true that during this time he had had discussions about money matters with his family, and also much family trouble. At the same time he returned to religious ideas, and even to religious practices, for which he had always evinced some aversion. A few days before he came to the hospital, he had

XUM

felt general malaise, with lassitude, extreme feebleness and insomnia. The 15th of June he was unusually taciturn. On the evening of the 17th, he wrote to Dr. Demarquay, whose acquaintance he had made in the ambulances (military hospitals) of Paris, begging him to come to see him, because he felt very sick; the next morning writing another, telling the Doctor not to disturb himself as he had decided to enter the Maison de Sante.

So, this morning D. quitted his domicile without letting his family know of his sufferings, pretending he was going a journey of some days, but coming in secret to the Maison de Sante, where he took a private room on the ground floor.

Autopsy.—30 hours after death, in a very warm temperature. Rigor.—Mortis very pronounced; reddish congestion on all the depending parts.

Lungs.—A little emphysema on the surface; on the two apices a few tubercles; from both lungs, which were very large, upon being cut escaped very black blood. The trachea and the larger bronchii were filled with a rose colored froth which completely obstructed the cavity of the vessels; the mucus membrane of the same is also red, whereas that of the smaller bronchii is normal, the ultimate bronchii containing no mucous. No pulmonary œdema. No little ecchymoses in the vicinity of the root of the lung.

Heart.—Is a little large, loaded with fat; both ventricles are full of diffluent black blood. No fibrinous clots or valvular lesions. On the internal face of the aorta we found large ecchymoses.

Stomach.—Is empty. At the level of the cardiac orifice we found upon the mucous membrane little ecchymoses and arborisations very marked. On the superior portion of the cul-de-sac, is an ecchymotic spot of an undefined contour, which is elongated and lies in the middle of a tufted and dark colored arborisation. Several of the replications of the

mucous membrane are the seat of brownish discolorations. The pyloric orifice healthy.

Liver.—Healthy.

Spleen.—Healthy.

Kidneys.—Capsule adherent, though putrefaction was already very pronounced, and the bladder contained no urine.

Brain.—Meninges are adherent and congested superiorly from the horizontal circumference. On the surface of the two lateral ventricles were found several light colored ecchymoses. The brain tissue is perfectly sound. The cerebellum, Pons varolii, and *Medulla oblongata* are *all normal.*

Spinal Cord.—The dura mater and pia mater, are both congested, principally at the level of the inferior part. The vessels were much congested, and, upon several points we found extravasations of blood. Special hardness of the "cauda equina." Ecchymoses at the level of emergence of the last intercostal nerves. Upon the posterior and inferior surface we remarked upon the pia mater numbers of small white star-shaped spots, resembling fragments of virgin wax, which were easily displaced under a jet of liquid.

M. Gomband, preparer of specimens in the laboratory of Prof. Charcot, has examined microscopically, the medulla oblongata and cord in a fresh state, but *found no lesion.* When these organs have become sufficiently hardened we shall examine them and give results.

DISCUSSION.

Summary.—A man of excellent health, non-alcoholic, having no mental alienation either acquired or hereditary, after several days of sadness and general uneasiness, is taken suddenly with hydrophobia; all the signs of *rage* being manifest; culminating in death in three days.

The autopsy shows the lesions which up to the present time have always been found in cases of death from mad dog bites. Two and a half years before the attack, the pa-

tient was bitten by a dog showing all the symptoms of "rabies canina." The autopsy was made by a veterinaire who declared absolutely that the dog was mad; and besides, this same bitch was nursing a puppy which died also mad, three weeks after its mother.

Such is, in a few words, the statement of fact, upon which we propose to make a diagnosis.

One thing appears without doubt to be settled; viz: the dog which bit D., was mad. The symptoms observed; the communication of the disease to the puppy which she was nursing and which she licked in an unusual manner the day before she became enraged; the death of the little dog with symptoms of rage; and the autopsies; all this leaves no manner of doubt.*

On the other hand, the morbid symptoms observed in the case of D., were absolutely those of the true rage—apyrexia at the beginning, sadness, insomnia, pain in the bitten hand; then the appearance of hydrophobia; the laryngo-pharyngeal spasms produced at sight of bright objects; at the sole idea of liquids; by the action of trying to drink; by the simple agitation of the air before his face; by the presenting of a bottle of ether; preservation of his intelligence and memory; absence of partial delirium; facial expression of fright during the spasms; marked secret terror betraying it by agitation; by the need to change place, and at the same time by the desire for repose, calm, silence and obscurity.

By the aid of reasoning, and of will power exerted over him, he, submitting to the influence of those around him, who, reassuring him and encouraging him by affecting

* We know that autopsy gives one infallible proof of the rage in the dog—viz: When we find in the stomach, a mass of litter, of wood straw, chaff, horse hair, leather, etc., etc., even a year after death, we can affirm at once that the animal died of the rage. Then we know that the dog of D. did devour a leather fauteuil, a bed spread, etc.

themselves an unconcernedness they did not feel, was induced to eat, however little, and also to drink, by the aid of several artifices, producing thus a relaxation of the symptoms which has been very often noticed on the second day of the *rage*. A little sleep is obtained by the choral enemas, but soon the spasms return; the agitation is augmented without either delirium, fever, or contractions. During these attacks, the patient seems to obey a blind force, which dominates him for several minutes, but as soon as the spasm has passed, he excuses himself, asks pardon, assures us he will be calm, and recover his self-possession. Soon sputation, which so far has been entirely absent, shows itself, appearing with the crises of furor, which augment in frequency and in intensity. In the intervals, the patient is conscious of his approaching end; demands a priest; becomes tender towards his relations; has exalted religious sentiments, and in those concerning his family, without delirium; at the same time imploring us in the most humble and touching accents, to disembarass his limbs from the cords of the straight jacket, and finally, falling into a sort of paralytic coma, he dies three days after the first attack.

Never do we see the symptoms of hydrophobia which are more clear, more complete, or more exempt from all complications. It is the unmixed classical type of rage.

I do not believe that any man can suppose here a case of *delirium tremens* under a hydrophobic form. Nothing in the symptoms, the antecedents, nor in the autopsy, authorizes any such hypothesis. Without, however, insisting, I pass on.

There is another form of hydrophobia, very analogous in its symptomatology and its termination, to the rage virulent.

It is one form of maniacal delirium, sufficiently rare in the ordinary conditions of our patients, but well known to those who treat cases of mental alienation, and which we

find remarkably described in the excellent work of Brierre de Boisment, which appeared in 1843 in the "Memoires" of the Academy of Medicine, under the title of *acute febrile delirium of alienation.* This paper, which has been very well analyzed by M. Labadie Laysane in the article on HYDROPHOBIA in the *Dictionaire de Medecine et de Chirurgie Pratiques*, contains, in fact, many observations, wherein hydrophobia is noted and described with great care. The same subject has been treated by Lelut, Baillarger, Calmeil and Thuler, but in all these cases it was discussed as an hydrophobia, entirely special, which I will call *mental* and *voluntary*; whereas, the hydrophobia of the *rage* is entirely instinctive, and suffered by the patient, who wrestles against it, very often with a singular energy.

In the hydrophobia of alienation, there is much of spasm, and of furor; there is also more of anger and of agitation than there is in the real rage; and there is also sputation, but there is nothing which resembles the special spasm of the rage. It is much less the hydrophobia, than the refusal of drinks, which coincides the most often with the refusal of all species of alimentation; on the contrary, the really enraged one taxes his own ingenuity to help those who take care of him, to find some means by which he may drink. Our patient brought different forms of æsophageal bougies for the purpose.

Many patients, in fact, imagine that if they can only drink, they will be cured.

Mental hydrophobia alone is capable of being happily influenced by the deglutition of liquids; the true rage is not at all modified.

It is not unusual to see the enraged ones, by force of will, manage to drink. They are not the less liable to die for that, nor is the disease, the least in the world, retarded by it.

My colleague, at the Maison de Sainté, Dr. Demarquay, has communicated to me a remarkable example.

During the siege of Paris, an old professor, his neighbor and friend, contracted the rage from a little dog who bit him on the lip, and died, enraged, at the house of M. Meunier, veterinary surgeon. The cause of the death of the dog was not told to his master, who, twenty days later, was himself taken with the rage.

"I closed the curtains of the bed," said M. Demarquay, "and tried to make him drink. From nothing but the idea, he was taken with internal convulsions, which seemed to affect the heart and the respiratory passages. After one crisis of these spasms, he managed at last to swallow some beef tea and some wine. During forty-eight hours, I made him swallow, four times a day, a glass of beef tea and of wine and water. The deglutition was always preceded by a crisis of alarming spasms, but, finally, he would drink. At the end of 48 hours, a few seconds after he had drank, he was taken with a violent spasm, during which he died."

But we contrast this hydrophobia (rage) with that of the merely alienated patients, who defend themselves like demons when we try to make them eat or drink; who close the mouth tightly, twisting themselves and striking out all around them; and uttering ferocious cries. There is such a capital difference between the two conditions, that in the chapter *differential diagnosis*, Briere de Boismont mentions meningitis, tetanus, epilepsy, etc., but does not mention *rage*, as if he judged that such a mistake was impossible.

Two years since, when I was physician at the hospital St. Antoine, a very curious case occurred in the service of Doctor Mesnet, who was so good as to ask me to examine it with him. This note is not yet published, but it has been read recently to the Society of Practical Medicine, and will soon appear in the UNION MEDICALE, under the title of *Délire aigu hydrophobique*, (acute hydrophobic delirium.)

The patient exhibited all the signs of classic rage: respi-

ratory spasm, special sputation, constriction of the throat, efforts to drink, rapid death, etc.

Nevertheless, at the beginning of his affection, certain signs appertaining to the delirium of persecution or trouble, struck my learned colleague. Dr. Mesnet soon found out that the patient had had several accesses of mental alienation, with attempts at suicide. He was, moreover, a proved drinker; he had already once had symptoms of hydrophobia, and there had been mental alienations among his relations. Then the delirious conceptions increased, and imprinted upon the disease an entirely special type. The patient told us that a woman was the cause of his sickness. This woman was a fortune-teller. He had lived with her for ten years. He left her two weeks since. At this time this woman had great power over him. She shuffled the cards, then suspended in the fire-place a beef's heart, pierced with pins; and so long as it remained thus, the patient would be condemned to suffer. By employment of analogous means, she had already made a man suffer, by making him walk six hundred and seventy-five miles, without stopping or eating.

We see in this case that alienation occupies, in the general picture, a place almost as important as the hydrophobic symptoms, and I comprehend, up to a certain point, that if we depend upon this morbid element, we make of the hydrophobia a symptom of mental alienation. Nevertheless, I shall permit myself to make to my excellent colleague of St. Antoine some observations, not upon the title of his pamphlet, which is unassailable; it is, perhaps, too much so—but he is not specific enough. Unquestionably, the patient died with some delirium, and of hydrophobia But did M. Mesnet intend to draw his observations as nearly like those of Brierre de Boismont as possible? The reflections which accompany it tend to make us think so. Then, I have reread the memoir of Brierre de Boismont, and, as I said

before, I cannot find in the special hydrophobia of alienation anything but distant and superficial analogies to the hydrophobia of true rabies. On the contrary, in the case of Dr. Mesnet, it was entirely the respiratory spasm rabies, and all the habitual symptoms of the rabid virus, which we find entirely with the characteristic physiognomy. There is no fever, while it plays an important part in the observations of Brierre de Boismont, who entitles his memoir *Délire aigu fébrile des alienes*, without introducing the word hydrophobia. Finally, it is impossible not to remark in the observations of M. Mesnet that there is absolutely nothing said upon the probability or improbability of a rabid innoculation. In the face of symptoms of rabies, one is led to inquire if there is not a combination of the two affections, rabies and mental alienation? In this hypothesis, rabies should be the initial malady, and pertinently to which condition the mental alienation might set itself up, in a subject predisposed, and would have the appearance of complication. I add that this observation is so different from those of de Boismont, I shall give the preference to this interpretation.

I will say the same thing of an observation gathered by Durante, in the service of our common master, M. le docteur Gueneau de Mussy, (thesis of Gras., Paris, 1860.) There, also, was apyrexia at the beginning, symptoms identical with those of rabies; but the patient had delirium, and committed extravagant acts; he was alcoholic, like the patient of M. Mesnet. We have no certain indications as to his antecedents, as to his mental alienations, and we are ignorant if he did, or not, have any rabid innoculation. There, again, the union of symptoms of the rage, and of mental alienation, to me, appears to implicate a combination of the two morbid elements, and which we do not find thus united in the observations of Boismont.

It is not enough that a hydrophobic patient should have

even systematic delirium to entitle us to declare that his hydrophobia is symptomatic of madness; and I believe that we can often find in the symptomatic characters, and in the evolution of the malady, reasons sufficient to decide the question, which, nevertheless, I confess, may be extremely embarrassing in certain cases. But, in the case of D., there was nothing like this. Neither as an initial malady, nor as a complication, did madness appear. The preservation of his intelligence, and the absence of hallucinations, were noted nearly up to the period of paralysis. We know of no mental alienation in his family. As for himself, he had certainly oddities of character, and the fancies of an old bachelor; but every one agreed in representing him as a man of good sound sense, and of great energy of character; one who, by dint of intelligence and will, had succeeded in rising from the ranks of the workmen, and had, at great pains, obtained his diplomas. There is nothing, either in the past or present, which authorizes us to call the symptoms those of mental alienation, any more than those of alcoholism.

Shall we here agitate the question as to whether we have a nervous hydrophobia? That to me appears impossible, if we take the word in the sense generally taken, as applicable to special nomenclature—of hypochondriacal hydrophobia, which Dr. Brouardel has called *imaginary hydrophobia*, that which we might call *lyssophobia*, if this word had not been badly used by Dr. Bellenger, (thesis, Paris, 1845), to designate the true rage, of which he made, with Bosquillon, a simple nervous affection caused by terror.

In this sense, *imaginary* hydrophobia is an affection not very rare, of which certain examples have become famous, (le President de Trousseau, l'observation de Barbantini, 1817), but this affection is always cured, or at least, almost always. My colleague of the Maison de Santë, Dr. Demarquay, has

communicated to me a very interesting case which I am happy to relate briefly here:

In 1843, a man with rabies was brought into the service of M. Husson, at the Hospital Hotel Dieu. It was necessary to put him in a straight-jacket; and in this operation a which M. Demarquay, the Directeur, and a volunteer infirmary overseer named Guërin, proceeded with much trouble, the patient defended himself, trying to strangle those who held him, and covering their faces with slaver. The next day he died.

Young Guërin, eighteen or nineteen years old, being greatly frightened with the case, asked leave of absence to go home in the country to recruit, thinking he was sick. As he left the Hotel Dieu, he was violently bitten on the leg by a dog who was passing. He re entered quickly the ward. Dr. Demarquay put a constrictor bandage above the bite, which he cauterized deeply with the actual cautery.

Guërin, profoundly troubled, then set out, saying he should return in six weeks to die in the service. Forty days afterwards he came back to die, as he had said. The sight of water and of brilliant objects provoked in him a violent spasm. He could swallow nothing. We were all anxious about this poor lad. All these phenomena lasted forty-eight hours. At the end of this time, as he was still alive, Dr. Demarquay said to him in a spirit of pleasantry: "You have not rabies," because the other patient died in forty-eight hours; and M. M. Husson, Rastau, and Vigla spoke to him in the same strain. He recovered hope, he drank, and was cured.

It is in these cases of pseudo-rabies that Dr. Barth affirms he has never come across the symptoms described under the name of æreophobia. Now, then, it is impossible to liken the case of D., so rapidly fatal, and so absolutely like the most virulent rage, to those imaginary hydrophobias, which may have some analogies to the virulent hydrophobia, more or less close, but

which differ radically by their termination. Still it can be objected that nervous or imaginary hydrophobia may terminate in death. This I do not deny absolutely, though I do not know of one authentic case. But, in a word, we can conceive that the imagination, over-excited by this train of ideas, may tend to a fatal nervous affection, only that what to me appears so difficult to believe, is, that this nervous affection assumes so absolutely the clinical signs of true rabies that it may be impossible to differentiate them.

In support of my opinion, I find an extremely curious fact published by a veterinary surgeon, M. Deluc, in a paper upon rabies, which he read to the Society of Medicine and Surgery, of Bordeaux, the communication of which I owe to the kindness of Mr. Bonley. This case, I must say, did not receive from me the same interpretation as from the author, M. Deluc, in fact, resuscitates the paradoxes of Bosquillon and of Bellinger, who hold that rabies is an effect of terror, and not of virulent innoculation. His conviction does not go so far, however, as to counsel abstaining from the cautery in cases of bites. But his paper is very interesting from the large number, which he has reported, of bites by dogs evidently mad, without tainting the persons bitten. This is another proof that the rabid contagion has less hold upon man than animals, and it is a fact too consoling not to be noticed in passing. But I come to the observation of M. Deluc, which I wish to analyze:

A young girl was bitten on the knee and licked on the lips by a dog evidently rabid, on the 9th of March, 1868. Thirty-six days afterwards they came to find M. Deluc. *She had had* delirium eight days. She had *eaten nothing;* had horror of drinks, and *tried to bite.* "Bite if you will," said M. Deluc, and good-humoredly offered his cheek to her. This gesture, the inspiration of the moment, had its full effect; the patient cheered up, finished by drinking, and recovered, after, however, ten days of sickness. Certainly, in this case, the

patient was in a condition to die. But in what manner will she die? M. Deluc has told us: "Her exaltation would have augmented. Very weak from loss of nourishment, she would have decided to take nothing." That is to say, she would have died of mental alienation, and not of rabies. The hydrophobia of M'lle. X., was in the refusal of drinks, complicated with the refusal of food. Her delirium and her menaces to bite, give to her illness the true stamp of mental alienation. The duration of her sickness is not favorable to the hypothesis of rabies. We can not too much admire the cool courage, the conviction, and the excellent inspiration of M. Deluc; but if he flatters himself that he cured a case of rabies, he is mistaken. He has only cured a case of imaginary hydrophobia; and without proof to the contrary, I shall not admit that we can pass from the one affection to the other, nor that a patient having nervous hydrophobia can become affected with rabies, or true hydrophobia. All my clinical observations forbid me to admit that a concurrence of conditions so characteristic as those of rabies, can be sometimes the manifestation of a special virus, and sometimes the result of a simple functional deviation of the organism.

I cannot say whether I have been influenced by the impression I have felt about the unhappy patients I have seen, (this is the fifth); but it seems to me that the cases of true rabies, carry in the highest degree the seal of specific virus; and it also seems to me that nothing in the world, unless from the same cause, is capable of producing in so short a time, effects so formidable, and so identical to that in all these cases. Have we ever seen the neuroses reproduce thus faithfully the effects of a virus? Have we ever seen the syphilitic hypochondria, so tenacious, so deplorable, so overwhelming, terminate in syphilis?

I find moreover, analagous conclusions in a dissertation by Dr. Christian (*Gaz. des hôp.* 1st May, 1869.) For him, as

for myself, nervous hydrophobia is but a variety of hypochondriacal delirium.

This delirium may be calm or furious; it may terminate in death; but we never see established the rabid spasm, properly so called. The hydrophobia which is there produced sometimes, has no similitude with that of the true spasm of rabies.

I do not know for my part any authentic fact which may be contrary to these conclusions.

The note upon hysterical hydrophobia by Burgraeve of Gand (*Gaz. des hôp.*, 23 Sept., 1854), terminating in death, is too incomplete to enable us to affirm that it was in all points like a case of rabid hydrophobia. The phenomenon of sputatiôn is not mentioned.

And in any case, if the symptoms had been absolutely those of rabies, I should conclude it was a true rabid hydrophobia, of the cause of which we are ignorant.

I can say as much of a fact which we find in the thesis of Matton (Strasburg, 1862).

A gardener thirty years old succumbed in forty-eight hours, with all the signs of rabies. As we could after the most minute researches establish that the patient had been bitten, and that on the other side he had experienced very severe chills the day before his attack, we have no hesitation in attributing the rigors to the outbreak of rabies. It is simply noted that the patient had never had any preoccupation particularly upon the subject of rabies, which made the author of the observation, M. Jacquier, entitle it without hesitation "*Rage Spontanée*" (spontaneous hydrophobia).

Nevertheless a fact described in the notes gives us a thought.

At the beginning of his affection he experienced a pretty lively pain in the right arm. It is therefore possible that this member had been the seat of an innoculation which had escaped the notice of the patient, or that he had dis-

guised it, as is not rare with such patients, who always strive against evidence.

Then, to conclude, in the presence of a pretended essential hydrophobia, terminated by death, I will submit this dilemma, viz: either the patient has presented all the signs of rabies, and it is in fact a *true* rabies, of which the cause remains unknown, or, he died with symptoms which were not absolutely those of rabies, and which might be referred to some variety of mental alienation.

Pertinent to this I remark in the history of D., certain circumstances and a little fact which has its importance. It appears certain that following the bite in December, 1871, D. had had his imagination extremely excited; he was unquiet, preoccupied; for a long time watching the cicatrix, and many times wrongfully touching it with lunar caustic, at the same time, whether he knew or not the works of Bosquillon and of Bellenger, he pretended to deny the reality of rabid innoculation, saying that the patients died only of fear. Before us, also, during the first hours at least, and until his reason was vanquished by frightful evidence, he affected a confidence which he did not really possess. He was not willing to appear to attach the slightest importance to his malady, neither to appear the least in the world preoccupied with the cicatrix on his hand. This affectation which has been so many times noticed in these patients, was here well characterized; but this is not all; he told us that a long time back, but could not remember the date, he believed he had felt some symptoms analogous to those he experienced when he decided to enter the *Maison de Santé;* but added he, "They were not so strong."

He at that time consulted a doctor of the hospitals, M. Potain, who had no remembrance of the fact, and after all I believe it was not M. Potain whom he consulted. What significance must we attach to this little fact? For me, I see in some degree a rough draft or sketch of imaginary hy-

drophobia coming in unexpectedly, pertinent to an insignificant malaise; one of those common sore throats to which he told us he had always been very subject.

If imaginary hydrophobia showed itself in our patient D. at all, it ought to have been at this moment. It should have been at a time nearer that of the bite, when he was able to rely on his own judgment at least, under the shock of the incubation.

However, he had nothing, for nobody around him I am assured had any knowledge of the fact; and those who were living intimately with him, have ignored his story of inquietude and his visits to M. Potain.

How can we allow that a nervous hydrophobia, not manifested under these conditions, waited a year or more later, before breaking out; that is to say, at an epoch when the security was greatest, not to say even complete, as in the case of D.? In general, it is one of the most constant characteristics of imaginary hydrophobia, that it appears very near to the time of the cause of it; and without speaking of the characteristics of D., which became a case of true, rabid hydrophobia, the *time* of its appearance does not well agree with the hypothesis of an imaginary hydrophobia.

Now, outside of imaginary hydrophobia, as we are able to define it, and as it is generally defined, there exists a certain number of cases badly defined, which have not yet a well established place in medical science, or which, at the least, only figure there as rare species, of which the classification is not yet well determined.

M. le Docteur Gros has dedicated a special division to these cases, of which there are six, in his Thesis, arranged under two categories. In the first, we find four cases of mortal hydrophobia, developed in subjects who had been bitten by dogs who did not go mad; and in the second, we find two cases of mortal hydrophobia developed in individu-

als who do not appear to have suffered any species of innoculation.

These are not the only cases known to day in science.

I have made an abstract of those which I have been able to find, and which I analyze briefly here. No doubt others exist, but which have escaped me.

(1) *A.—Cases of Mortal Hydrophobia following the Bite of a Dog not Mad.*

1st. Obs. IX. (Thesis of Gros.) Roziere Journal de Sédillot, 1806: Child, thirteeen years; hydrophobia; convulsions; sputation not noticed; death in two days. The child had been whipped the evening before, and was bitten on the cheek thirty or forty days before by a butcher's dog, who did not become afterwards rabid. Symptoms complete. Obs. dubious.

2d. Cases announced by Virey (Acad. de Méd., Feb. 15, 1827).

3d, 4th and 5th. (Acad. de Méd in Arch., Gen. de Méd., 1827, p. 440.) Three cases; one each by Léveillé, Longet, Villermay, and Marc, briefly reported; mortal hydrophobia in two cases, bitten by non-rabid dogs. The third case of Marc is more than doubtful, because the malady lasted twenty days.

6th. Obs. VIII. (Thesis of Gros.) Communicated by Velpeau (1835) to the Méd. So. of Emulation: Young boy, thirteen years, bitten in the cheek; cicatrix healed in eighteen days; one week later rabies *declared itself;* dead in three days. The dog was not mad, and was killed the evening before the death of the child. Diagnosis of Velpeau. Symptoms not noted.

7th. Obs. X. (Thesis of Gros.) Obs. of Putégnat, of Sunéville, Gaz. hebd., 8th June, 1860. Child nine and one-half years; all the signs of rabies; dead in three days; had been bitten six weeks before, by a dog who was driven

away with a stick from a house where he was following a rutting bitch. The dog has not become rabid since.

8th. Obs. XI. (Thesis of Gros.) Young man twenty-nine years; died rapidly with all the signs of rabies; had been bitten seven or eight months before by a dog who had not gone mad up to the death of the patient.

9th. Obs. of Decroix. (*Abeille Méd.*, 14th Sept., 1863.) 21st June, 1862.—The dog Tom is bitten by the dog Black. 10th July, 1862.—Tom bit a horse and several dogs, among them Black. 13th July.—Tom died in rabid. 15th May, 1863.—The horse died mad; Black has not been rabid. M. Bouly, in the discussion in the Acad. de Médecine, admitted that Tom must have been bitten by a rabid dog, but not the dog Black.

10th. Obs. of Delpech. (*Gaz. des hôp.*, 1869.) A dog excited by a rutting bitch, who was too small to take him, bit a porter who came to prevent him, and drive away the bitch; also bit a carter, under the same circumstances, and tried to bite his master. They drowned the dog, who showed no signs of rabies. Ninety two days after the bite, the porter died of hydrophobia.

B.—*Cases of Mortal Hydrophobia without Probable Innoculation.*

1. Obs. XII. (Thesis of Gros Gaz. des hop., 1858, p. 75.) Soldier thirty years; libidinous and blenorrhagic, spermattorrhæ; rabiform hydrophobia; hallucinations; sputation. Patient retained his reason. Emphysema around the trachea. At the end, hydrophobia diminished. He drank, with difficulty, a pint of wine and water. Coma. Dead in four days.

2. Obs. XIII. Thesis of Gros. (*Gaz. Méd. de l'algeric*, 20th of September, 1868, and *Journal du progrès*, p. 278, Dr. Tisseine, 1856.) Soldier of the train; hydrophobia; moderate fever; access of furor; sputation. Dead in three days. Bronchial froth. He denied being bitten.

3. Obs. of Jacquier (*Bulletin de therap*, 1857, p. 549). Gar-

dener thirty years; all the symptoms of rabies; pain in the right arm; no bite; no belief in hydrophobia. Dr. Jacquie gave his observation the title: *Rage spontanèe.*

4. The thesis of Mondville, spontaneous hydrophobia produced by moral causes. *De la rage spontanèe produite par des affections morales*, 1821, No. 197, contains six observations, with few details, very doubtful as to symptomatology. Among others, that of a servant girl violated during her menstruation. A fact relative to a young soldier seems much more like the rabies (spasms, sputation, begs that everybody will withdraw when he feels the access coming.)

6. Obs. of Durante (VII du la thëse de Gros.) All the signs of the rabies; signs mixed up with those of mental alienation. No innoculation established.

7. Obs. of Mesnet (*Union Mèdicale*, 1874.) Same circumstances.

We can, grouping together all these cases, and without touching here even incidentally upon the question of *spontaneous* hydrophobia *in man*, leave them until we have more ample information upon the action of essential hydrophobia.

It is that which makes M Brouardel, (loc. cit.) apply the name of *imaginary hydrophobia* to all the preceding group.

And now, see the objections that can be brought against my argument.

They say: "Your patient did not die of innoculated rabies; it is out of all possible limits of incubation; and a bite which had run back two and one-half years, was as though it had not been made. That which contributes to prove this, is, that neither of the two persons bitten at the same time had hydrophobia. It was, therefore, death caused by a particular species of imaginary hydrophobia, as are all the deaths of patients who have been bitten by non-rabid dogs, or who have not been bitten at all. To establish that your patient died of virulent rabies after an incubation of two and one-half years, there was

one single proof which you have not furnished. It was to innoculate one or more dogs with the spittle of the patient while he was still living. If the experiment had succeeded, no body could have denied the virulence of the rage; at least, it would have been an argument in favor of the incubation of two and one-half years; and in the absence of this proof, we shall always insist that the patient died of imaginary hydrophobia."

Here is the objection in all its force. At all events I have have not attempted to weaken it. But let us see if it cannot be answered. Firstly: The argument held that the two persons bitten at the same time as our patient, retained their health, is not absolutely good. We know, thank God, that a rabid dog does not make as many innoculations as bites. The administration statistics from Dr. Brouardel (loc. cit.), gives, it is true, forty-seven per cent., but our colleague remarks that the greatest part of the cases, not followed by any accident, escape the notice of the administration. The Kingdom of Wurtemberg gives twenty-eight deaths in one hundred and forty-five bites; the General Hospital in Vienna, in 1860, twenty-five in one hundred and fifteen. "In thirty-six persons," says M. Leblanc (*Documents pour servir â l'histoire de la rage*, Paris, 1873), "bitten by rabid dogs who died under my eyes, thirty-one escaped with no symptoms, and five died."

I have already produced the numerous cases of non-contagion, which the paper of M. Deluc contains. In the reply which he made to this paper, Dr. Dupont, (Soc. de Mëd. et de chir, de Bordeaux, April, 1874), confirmed the statement of M. Deluc, and said he could bring a large number of cases to bear upon the same point. It is nothing, then, out of the ordinary to see two out of the three escape.

I come to the question of incubation. Now, what do we know to-day upon this point? Very little. We ignore absolutely the nature of the rabid virus; how it has spontaneous birth

in certain animal species; how it acts in organisms which it has penetrated through innoculation. In this regard, our forefathers, or the ancients, were much less affirmative than we are to-day. People have tried to put more precision into this difficult question; and have clearly eliminated a large number of cases, more or less old women's stories.

The errors of diagnosis so frequent in matters concerning rabies; the notions recently acquired upon the subject of hydrophobia, viewed as a symptom of alcoholism, of mental alienation, of tetanus, of the grave fevers, of hysteria, of epilepsy, of certain kinds of poisoning, etc., have finished by inspiring a scepticism nearly absolute upon all the past; so that it is to be feared we have erased cases which appear too exceptional, while we have fixed the extreme limits beyond which the rabid virus should be no more expected. It is generally admitted to-day (report of M. Tardieu to the consulting committee on hygiene, 1860; communication of M. Bouley, at the Academy of Sciences, April 4, 1870), that rabies declares itself oftenest in the two months following the innoculation; three months passed, it is rare; it is exceptional that six months elapse before it breaks out; after eight months, according to the opinions of those men who are occupied with the question, and who are the most competent, we find no case which is not susceptible of the strongest objections. Nevertheless, Dr. Brouardel, who, upon this point, agrees with the general opinion, admits, exceptionally, two cases in which the incubation had lasted much longer. In one of the cases it lasted fifteen months, (*Dissez, mém. de méd. milit.*, second series T., XVII., 1856); in the other, eighteen months, (Valentin, Union Med., 1856, p. 432.) These two observations appear to my colleague to present the characters of undoubted authenticity.

I have made, in this regard, researches less extensive than I

could have wished, and here are a few cases to add to the preceding ones:

In the *Annals méd. psych.*, 1843, M. Mesnet has had the kindness to indicate to me, on pp. 92 and 132, two observations (one by Aubanal, formerly interne in Paris, now of the Asylum for Mental Alienation in Marseilles; the other, without the author's name, read at the *Soc. de Méd.* of Paris, in which the incubation had lasted eleven and twelve months. These two observations appear to me still more indisputable than those of Dissez or of Valentin. I will say as much of the note of Corriere, interne with M. Huguier, at Beaujon (*Gaz. des hôp.*, 1864, No. 116), where the incubation had lasted eighteen months. The very curious circumstances of the observation and the reflections which accompanied them, are by M. Després, who succeeded then, as Surgeon of the Central Bureau, M. Huguier, at the Beaujon Hospital.

M. Champagnat, in his thesis upon hydrophobia (Paris, 1867), cites, under the authority of John Hunter, an incubation of seventeen months.

M. Deluc (loc. cit.) said he had an authentic case of incubation of one year in a dog.

I am convinced that further researches would discover other analogous cases.

We see, therefore, that, exceptional as they are, these cases are not absolutely rare. Now, I ask: Is not an incubation of eleven, twelve, fifteen, or eighteen months something for us almost inexplicable? From the moment we see that a virus can sleep eighteen months in the system, without any sign of its presence, is it unlikely that the same phenomena could be prolonged six months or one year longer? and where shall we stop?

Nothing, then, in my opinion, demonstrates that rabid virus may not hold itself in abeyance in a contaminated organism to a much more extended time than is admitted

to-day; and there is nothing to prove that I have not the right to record my case with those I have cited.

Without doubt, the best argument I could bring would be a positive innoculation of the saliva of the patient, in which I made default. I had hoped to make this experiment, but time and means both failed. *Occasio præceps.* A few hours after the death of D., a most distinguished veterinary surgeon, M. Weber, who heard of it by accident, came to offer his services, but it was too late.

After all, I do not know whether the experiment would have cut short the discussion.

If the innoculation had succeeded, an objection would have remained, a little common-place, to be sure, but still difficult to answer. It might have been said that the *rage* of D., well and duly recognized as virulent, was due to an innoculation posterior to the bite of December, 1871, of which the patient was unaware, or that he had voluntarily disguised it. As this objection can always be offered, I shall be permitted to remark how little is here offered of probability.

In the long conversation I had with D., he entered into the smallest details of his life, and himself recounted the incidents of the bite of 1871. How can we believe that he kept disguised another bite?

As to an innoculation by licking or lapping, it is not very probable. We are bound to believe that D., who had been so much preoccupied with the events following the bite, would have had reason afterwards to keep all dogs at a respectable distance. All the evidence I have been able to gather convinces me that he had but the one innoculation—that of 1871. Then, in case the experimental innoculation had failed, what conclusion could we come to? Do we know at just what point the most virulent rabies is innoculable from man to the dog? Such trials have often failed.

I will cite among others the note of M. Bergeron, (*arch de méd.*, 1862), where trials were made, with all the care imaginable, and under the best condition to obtain results. The number of positive innoculations was in the minimum. M. Bouley has written "that the saliva of man is virulent, but in a much lesser degree than that of the carnivora."

We see, then, that a negative result would not have been certain proof of the non-virulence of the rage of D.

If this is so, in the actual state of science, seeing the complete ignorance we have of the possible duration of the incubation of rabid virus, and seeing the numerous examples of incubation prolonged from twelve to eighteen months, it appears to me impossible to call *spontaneous*, a hydrophobia completely identical in its form to the *virulent* rabies, and which declares itself two and one-half years after the bite of a dog clearly mad; and I conclude, definitely, for the reality of the incubation.

Though this discussion may be much too prolonged, I will ask permission of the Academy to add a few words upon the symptoms and the pathological anatomy of rabies.

Already, in a first memoir, which runs back to 1859, and which M. Brouardel has done me the honor to quote, at the same time combatting it, I said that the bronchial froth (écume) appeared to me to play an important part in the phenomenon of sputation. The fact had forced itself upon me, as I was observing a hydrophobic patient. I was ignorant at that time that it had been discussed and established in an excellent article by Trolliet and Villerine, (Diction. des Sciences Médicales). Finding it there excellently well described, I was astonished that, in 1859, it had not become current coin in science; so much the more that Bérard and Denonvilliers, in their *Compendium de Chirurgie*, have added the weight of their authority. Since that time, M. Gros has admitted it in his Thesis (1860). In 1869, in the *Société Médicale des Hôpitaux*, I reproduced my

remark, pertinent to an interesting observation on rabies, communicated by M. Millard; and in the following meeting, M. Ernest Besnier brought to us an observation of M. Lagorce-Lavergne, of Lille, who also attributed to the bronchii the principal origin of the rabid froth.

M. Boucher, of Ville-Jossy, also agreed in this opinion.

M. Brouardel still refutes that, to-day, meanwhile relying upon an authority which I highly respect, certainly, that of M. Bergeron. I maintain, nevertheless, my statement; and in the recent cases, as in that of 1859, here is what I have observed, viz: The enraged patient does not secrete saliva, or, but very little, in the first hours; that is admitted by all parties. The mouth is dry; the tongue pasty; the buccal mucous membrane is pale, as far as, and including the soft palate, also the tongue.

Already, at this time we can perceive, at least in certain cases, a redness pretty lively and shining, at the extremity of the pharynx, compared with the paleness of the rest of the mucous membrane.

The conditions remain thus for some time. It is only a few hours before death that sputation appears, and suddenly, the violent attacks of furor break out. So far, he has had nothing but agitation, and that we could control more or less easily by reasoning. From this moment the straight-jacket becomes indispensable. When the patient is about to expectorate, we are notified by a sort of vomative effort, which is limited to the pharynx, the diapraghm taking no part. It is a kind of regurgitation. Then the patient says he is *strangling*; that *bile suffocates him*; that he must vomit; if he is lying on his back, he begs to be turned on to his side, so that the "*bile will run out*" the more easily. That which we have taken for an effort of deglutition of saliva, is an effort of regurgitation—of expulsion—and it seems to me to be determined by the entrance of the bronchial froth upon the isthmus of the fauces. When the patient feels

that froth is in his mouth, he is taken with spasms, and with chills, and he recoils with horror. The water which he tried to swallow, produced the same effect. I think that this froth ascends slowly, but incessantly, driven, perhaps, by the ciliary epithelium, or, perhaps, by some special spasm of the respiratory passages. While the quantity of it is elsewhere, it is most singular that a few moments before trying to expectorate, the patient's mouth is dry, and he complains that he has not saliva.

I do not pretend to deny that at this very moment the salivary glands may begin to secrete. About this I know nothing.

I have not said that the rabid virus is exclusively contained in the bronchial froth, nor do I now know more about it. I am equally in the dark as to what takes place in the dog. I am content to acknowledge in the human subject, following Trolliet and Villermé, the large part which the bronchial froth takes in the phenomenon of sputation. And I believe I am the first to describe the movement of regurgitation, which signalizes the arrival of this froth in the mouth. I believe every body would verify the exactitude of my description, if they could once see this when opportunity afforded.

In accordance with this explanation, in the two autopsies I have made, I found the large bronchi and their divisions filled with a quantity of rose colored froth (écume). In the same points the mucous membrane was of a lively red, with little sanguineous effusions; and on the contrary, the buccal mucus membrane is pale and seems normal.

It is very remarkable that in nearly all the autopsies made, we find the apparent integrity of the salivary glands. We find neither redness nor hypersecretion, whilst the bronchial froth, and the redness of the pharynx and of all the air passages are very often noted.

Trolliet and Villermé have set out the absolute impossibility of supposing that this bronchial froth proceeds from

saliva, which goes the wrong way during deglutition. "It is not the saliva which constitutes the frothy slaver; this on the contrary seems to ascend from the chest."

It is truly surprising that, with such a quantity of bronchial froth, and such acknowledged signs of irritation of the mucous membrane, the patients *do not cough.* There is probably present a special kind of bronchial anesthesia, and it is without doubt the absence of the cough which has prevented most authors from attributing to these lesions the importance which they seem to me to merit.

Still the cough does sometimes exist, (obs. de Michel et de Féréol *actes* de la Soc. Méd. d'obs., 1859,) and in these cases we found signs of bronchitis on auscultation. But we can conceive that it is often difficult to auscultate at the moment when sputation is produced; the patient being too much agitated, and often is in the straight-jacket. But nearly always at the beginning he complains of oppression; a feeling of constriction at the throat, and of weight on the sternum, whilst he never complains of puffiness or swelling, nor of pain either in the parotid or sub-maxillary glands.

It would not be exact, for the rest, to say that the patients succomb to asphyxia, if we take the word in the sense of a mechanical obstruction to respiration.

The lesions which we observe upon the dead body, are much less those of asphyxia than of congestion. The little ecchymoses about the umbilicus of the lung are often absent, and are always very slightly marked.

The patients are not asphyxiated, properly speaking; they fall into a kind of comatose torpor, which we have called the paralytic period, or else they die suddenly. And in either case it seems that it may be by an exhaustion of the nervous influx.

It would not be just any longer to attribute to cutaneous hyperesthesia, the symptom signalized under the name of aërophobia, a symptom to which Dr. Barth attaches consid-

erable value, since he says that he has never seen it established in the imaginary hydrophobias.

Cutaneous hyperesthesia, it is true, has been noted in a large number of cases, among others by M. Bergeron (*arch. de méd.*, 1862).

On the other hand I have established in my patient a very marked anesthesia. The same fact is described in an interesting observation of M. Delpech (*Gaz. des hôp.*, 1869). The patient had cruelly wounded himself on the head wishing to kill himself, and said he did not suffer from it, and that it did him no harm.

We know that analgesia is the rule in rabies in brute animals. In this last we often see animals tear and wound themselves without showing any sign of pain. They feel, however; they recoil when we touch them with red-hot iron, but do not cry, not even when they are rolled or pushed about, at the same time biting sharply. The spasm produced by the agitation of the air seems not to depend so much upon the cutaneous hyperesthesia, which is not established, as upon a special excitation of the respiratory nerves.

The rabid spasm, itself, has in its form something of respiratory complication, which has not escaped any observer, and which distinguishes it absolutely from the hydrophobic spasms due to other causes than the virus of rabies.

The principal symptoms, and the principal lesions of rabies seem, therefore, to cluster round the respiratory functions.

Everything is consistent with this view; and there is in this concordance a powerful argument in favor of the important part which it is necessary to attribute to the bronchial froth, in the pathological history of rabies in man.

Having arrived at the end of this discussion, I will, if the Academy permit, sum up, under the form of propositions:

1. The incubation of rabies is most often limited to the

two first months of innoculation, but can, exceptionally, extend itself much longer, viz: as much as eighteen months, as much as two and a half years.

2. The symptoms of rabies, habitually very uniform, may assume very different aspects under the influence of a number of elements, (mental alienation, alcoholism, hysteria, etc.); but there are certain signs, such as the respiratory spasm, the special mode of sputation, the symptom described under the name of aërophobia, which belong only to rabies and which ought, very often, to permit of a diagnosis under these complications.

3. If imaginary hydrophobia, which is generally cured, can terminate in death, we ought to find in the symptoms sufficient reasons to affirm that it is not veritable rabies.

4. The bronchial écume (froth) plays an important part in the phenomenon of sputation in hydrophobic patients; and the principal symptoms, as well as the principal lesions in rabies in man, are grouped around the respiratory functions.

It is the respiratory character which distinguishes rabid hydrophobia from all other hydrophobias of a *non-virulent* kind.

NOTE BY THE TRANSLATOR.—To avoid repetition, the word rabies, wherever used without qualification, represents the condition of innoculation by the virus of "rabies canina."

The translator desires, also, to add a case from his friend and confrére, Dr. Maci, as follows: Two brothers in Bordeaux were bitten by a dog supposed to be mad. One brother went to America. After eighteen months, hearing nothing from the brother who remained at Bordeaux, he returned, and found that his brother had died of hydrophobia. He was taken sick at once, and died of hydrophobia. Details not known.

XUM

EDITORIAL.

With this, the first number of a new volume, we have a few words to say of ourselves to our numerous readers and subscribers. We have endeavored to present them with a medical journal, which however far it may have come short of the ideal, should aim at least, at being thoroughly scientific and completely original. This has not been the easiest task in the world for us. It would have been far more so for us to have filled our pages with extracts from other periodicals, but this is already done by a sufficient number of our cotemporaries, and we have spared our readers the repetition of what in many instances they must already have seen over and over again. But we have had a far greater difficulty than this to contend with. The newspapers, with their increasing, and absurd devotion to the practice of paragraphing, as it is called, have infected to some extent our medical journals, and even tainted the taste of multitudes of readers. We meet every day with assertions that everything must be compressed, that short articles are best, that busy practitioners have not time for long dissertations, and so on.

We beg leave to think that such remarks are both absurd and injurious. Not that we imagine for a moment that an article is valuable because it is long, any more than because it is short. But who can drink to satisfaction merely by repeated sips, or eat by mumbling crumbs? Just as well may one hope to get useful knowledge by having it presented in scraps, and isolated fragments. Reading, as a deliberate action of the mind by which it exercises as well as fills itself, is defeated by such shallow artifices, and the result is a growing disposition on the part of many to become mental pack horses, carrying neat and convenient parcels of knowledge selected and put up for them by others without any ideas as to the relations of part to part, or ability to use the knowledge which they carry about so neatly arranged and labeled.

Neither can we believe, as some say, that all we want is a simple statement of the results that have been attained by scientific inquiry; it is a benefit as well as a pleasure that we follow the methods, and only those who do this to some extent can be much benefited by the results.

We have aimed not only to publish an original journal, but to avoid the paragraphic mania of the times. In doing this we have sacrificed immediate popularity to permanent value, and we ask our friends, and hose who approve of our course to help us, by extending the circulation

of the journal. Cannot each subscriber send us another, and so double the number; we earnestly ask them to try. There is another thing which we have spoken of before, and now mention again, viz: that we in common with our editorial brethren have to mourn the indisposition of many talented members of the profession to write. Much that is really valuable is thus lost, while a most excellent means of self-discipline is at the same time neglected.

Surely this is not for want of journals enough to receive all the contributions, nor for want of frequent exhortations from editors. Whatever is unusual in practice, should be recorded in the journals, those great store-houses of facts, for future use and reference, and there is no busy practitioner, however busy, who will not reap a tenfold reward to himself, by contemplating these facts and occurrences with the fixedness and attention best acquired, and generally only acquired by recording them.

We feel sure we need no apology to our readers for presenting them this month with an article on one of the epidemics of the lower animals, and we take great pleasure in calling their attention to Prof. Townshend's excellent paper on Hog Cholera.

Not only economic and humanitarian considerations urge us to a study of the diseases of the inferior animals, but scientific reasons amply confirm the importance of such studies.

If all anatomy and physiology are one in their main facts and principles, so is pathology, and the most unexpected aid has often been derived to the understanding of human diseases from observations upon animals.

Prof. Townshend's modest, scientific and suggestive paper ought to be widely read, and may do great good.

With our opening number of the third volume we ask our friends to help and support us to the extent of their ability, and promise to try hard to deserve their good will, by unrelaxing efforts to make for them a first class journal.

In our next number, will appear a memoir of Dr. S. D. Turney, of Circleville, Ohio, Professor of Diseases of Women and Children in Starling Medical College, Columbus, Ohio, who died Jan. 22d, 1878, and who was well known to most of our readers, as one of the most skiful and talented physicians of Ohio.

XUM

REVIEWS.

The Ear; its Anatomy, Physiology, and Diseases. A Practical Treatise for the use of Medical Students and Practitioners. By CHARLES H. BURNETT, A. M. M. D., Aural Surgeon to the Presbyterian Hospital; Surgeon in charge of the Infirmary for Diseases of the Ear, Philadelphia. With eighty-seven illustrations. Philadelphia: Henry C. Lea. 1877. pp. 615, 8vo.

No work which has appeared since Roosa's Treatise on the Ear, is entitled to so much consideration as the book now before us. The author has been known to those interested in this specialty for some time as a most painstaking and trustworthy observer, and it is with no common degree of interest that we have read his book.

The object of the work is stated, by the author, in the preface, to present clearly and concisely the present aspect of Otology, and to indicate the direction in which further researches should be carried on. He also says, most justly, "that the pathology and therapeutics of the ear cannot be properly understood without a more intimate acquaintance with its anatomy and physiology than is afforded by the ordinary text books."

The work is divided into Part I.—Anatomy and Physiology which is subdivided into three sections, treating respectively of external, middle and internal ear. Part II.—Diseases and treatment, subdivided into eight sections, as follows: Examination of patients; auricle; external auditory canal; membrane tympani; middle ear; diseases of the internal ear, and deaf mutes and partially deaf children. This subdivision of the parts into sections, seems to us a very natural and convenient one, and greatly facilitates reference.

The part devoted to anatomy and physiology comprises one hundred and sixty-two pages, much more space than is commonly accorded to this most important part of the subject, and contains thirty-nine illustrations, which are mostly taken from the German. A careful description of the anatomy of each part is first given, and then its physiology. In speaking of the physiology of the auricle the author gives the results of some experiments of his own, first published in 1873-4, respecting the function of the external ear, especially of the auricle. His first paper was to show that it was a resonator for high notes, and the second was devoted specially to their physical explanation. These experiments were very simple and conclusive, and were controlled by Drs. Buck and Blake. It is worthy of note that the author makes frequent reference to his own re-

searches which have been rather numerous and always characterized by originality and thought. This is the more worthy of mention as so many of our text books are conspicuous by the absence of any originality. Some interesting experiments by Dr. E. Mendel, of the University of Berlin, as to the relative differences between the temperature of the rectum and that of the external ear under physiological and pathological conditions of the general symptom, given by Dr. Burnett, suggest to us the idea whether it would not be worth the while of the general practitioner to make use of them. The observer referred to found the normal temperature of the rectum higher than that of the external auditory canal. But in cases of apoplectiform and epileptiform paralysis, the temperature is higher than in the rectum. Both morphia and chloral, in sleep-producing doses, lower the temperature of the external auditory canal. Dr. Burnett indicates the importance of this knowledge to the aurist, in the fact, as shown by Mendel, that even ice bags fail to reduce the temperature of the external auditory canal as chloral and morphine do.

In Chapter II on the auditory canal, a short account of the development of the temporal bone is given.

Rare peculiarities of conformation are spoken of, and mention is made of the wide auditory canal and large auricle possessed by negroes, and the question raised whether this fact has any connection with the musical talent which is so universally met with in this race.

The author mentions a function of the auditory canal which he says he has observed, which we do not remember to have seen elsewhere, that of causing wax and small foreign bodies to fall out of it.

In Chapter III the anatomy and physiology of the drum-head are well considered. It is observed that whatever the color of the membrana tympani may be said to have, that color must always be modified by the physical conditions caused by stretching a slightly transparent membrane over a darkened cavity. The inclination and curvature of the membrana tympani receive most careful consideration, and the physical laws and conditions which bring about the production of the light spot on it, are well explained. A summary of the important views of Trautman on this subject are given. Some original studies upon the comparative distribution of blood-vessels in the membrana tympani are given, in which the following conclusions are noted:

1. There is a distribution of vessels in the membrana tympani of man peculiar to him.

2. There is a distribution of vessels in the membrana tympani of the dog, the cat, and the rabbit, constant in as well as peculiar to them.

3. A distribution of the blood vessels exists in the membrana tympani of the guinea-pig peculiar to it.

The anatomy of the middle ear receives very careful study especially in relation to the ossicula, careful measurements of their dimensions being given from the papers of Urbantschitsch, and of their weight by Blake. The topographical relations of the stapedius and tensor tympani muscle are also carefully studied.

In the physiology of the middle ear the author calls attention to all important recent investigations. Among the most important of which are the physiological nature of certain tympanic bands heretofore considered pathological, and the function of the round window and its membrane.

A full explanation of the functions of the round window are entered into, and an account is given of the method of examination used by the author and others, as well as of Weber-Liels experiments on the same subject. These experiments seem to prove that the membrane of the round window may be set in vibration by sound-waves from the membrana-tympani conveyed through the air of the tympanic cavity.

The Eustachian tube and mastoid portion of the middle ear are treated of in a separate chapter—both as to their anatomy and physiology, with much thoroughness and in a most interesting manner. The section devoted to a consideration of the internal ear, contains a full account of the anatomy of the labyrinth and auditory nerve as well as a good resume of the experimental work which has been done in elucidating the physiology of the semi-circular canals. We have occupied so much space already with this part of the work that we will not delay to comment further upon these interesting topics, but urgently recommend a careful study of this too much neglected part of otology which Dr. Burnett has made so accessible to all.

We have now to speak of the second part of the work, which considers diseases and their treatment. This section begins with a chapter on the examination of patients, a description of instruments and the method of using them.

The precaution which Dr. Burnett suggests that each patient should have an Eustachian catheter for himself, is, undoubtedly, a safe one. And yet, it seems to us unnecessary if the instrument be properly cleansed after each usage. That specific poison may be thus communicated, if due regard to cleanliness is not observed, may be true in some very rare cases, but from very long opportunity for observation, especially in dispensary practice, we have yet to recall a single instance in which it has happened. To have an instrument for each patient becomes expensive in private practice, and from the number treated in dispensary practice next to impossible, unless the expense be defrayed by the patient. Respecting the method of inflation during phonation, instead of swallowing, as lately suggested by Professors Luca and Gruber, the author says, that while he has suc-

ceeded in inflating the ear by following their suggestions, he is equally sure that it is neither as powerful, nor as certain, as Politzer's method. In very young and intractable children, who cannot or will not swallow, but do cry, Politzer's method is invaluable, for, as he taught long ago, the more the child cries, the more firmly does it lift up the velum palati and favor the attempts at inflation of the tympanum.

In the chapter on sound, hearing, and tests of the latter, sound and hearing are defined, and physiological acoustics briefly considered. The system of indicating musical notes by letters, is explained, and to facilitate the recording of the hearing in examination of the ear, Helmoltz's table of musical notes, whereby the position of a note in the scale, and hence, the number of its vibrations in a second, are given. A good description of the "deaf-points" of Urbantschitsch, as well as of the deaf-fields or triangles is given. These are explained by Berthold as entirely unconnected with the physiology of the ear, but entirely due to the interference of the tuning-fork.

The very interesting experiments of Nussbaumer, relating to subjective perception of color, produced by objective perception of the sound, are described.

The value of the tuning-fork in diagnosis, is considered with care, and Dr. Blake's experiments with a view of ascertaining the power of the ear to perceive high musical notes, as well as the acoustic character of vowels and consonants are fully discussed.

Section II begins the study of diseases, by first considering the organic defects of the auricle, and then its diseases. Besides the usual forms of disease of the auricle to be found in most text-books, a very good description is given of tubercular syphiloderma. The morbid growths and injuries of the auricle are considered in a special chapter. Angioma of the auricle is referred to, and the same affection of the lobule stated to have been but once observed, by Dr. C. J. Kipp, of Newark, New Jersey. The two varieties of othæmatoma or blood tumor of the ear, are very accurately described. In speaking of the method of remedying the deformity produced by traumatic cleft of the lobule, the author recommends the operation advised by Knapp, and introduces the fig, accompanying his description of the method.

Circumscribed and diffuse inflammation of the external auditory canal are next treated of. Dr. Burnett recommends, to relieve the pain in circumscribed and diffuse inflammation, the instillation of Majendies solution into the ear. He states that it is well borne even by children, and that not enough is absorbed to produce any alarming symptoms. To destroy the buttons of granulation which sometimes appear in the canal, he

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strongly recommends the use of monochloro-acetic acid, which he has also found useful in polypi of the middle ear, after removal, to prevent their recurrence. Dr. Burnett dissents from the view entertained by many authorities in this country that thorough and frequent syringing the ear with warm water is sufficient to destroy vegetable parasites (aspergillus) in which opinion we fully concur. He recommends hypo-chlorate of lime as the best and most soothing parasiticide.

In the chapter on foreign bodies, in addition to the usual forms of obstruction of the auditory canal, we have a careful description of Wreden's so-called keratosis obturans, which disease consists in the accumulation of masses of horny epithelial scales, derived from the cutis of the external auditory canal, of gradual accretion, causing great deafness, and very obstinate in its resistance to removal. In the chapter on the results of inflammation and injury, Dr. Burnett calls attention to cholesteamatous tumors in the auditory canal, or, as they are sometimes called, pearly tumors. They do not seem to be common in this country, and the only account of such a case is by Dr. Kipp, in both ears of a man twenty-seven years old. The cholesteamatous masses are usually found in ears which have long been the seat of chronic suppuration, but in which the latter process has apparently run its course.

Dr. Burnett differs from most authors on aural surgery by recognizing an acute myringitis, while admitting that anatomically, it is not easy to describe such a condition, without disease of the middle or external ear. In many cases, it may be of great clinical convenience to speak of an inflammation of the drum-head.

Section V treats of diseases of the middle ear. In enumerating the symptoms of acute inflammation of the middle ear, the author accepts as the most likely explanation of the tinnitus "the vascular theory" of Theobald, in which the subjective sensation are not considered imaginary, but a real existence; and, therefore, tinnitus aurium has a real existence, being due to morbid vibrations produced in the vessels of the inner ear, and then communicated to the nerve, but when there is no increase of pressure in the labyrinth the noises may be accounted for by some defect in the sound conducting apparatus. Especial stress is laid upon the importance of acute inflammation of the middle ear in young children, both as to diagnosis and treatment. The author very truly remarks that this disease "is too commonly overlooked in them, partly on account of the difficulty of examining young and suffering infants, and partly on account of their inability to locate their pain and communicate their feeling to others." It might be added too that the nature of the disease is mistaken, because of the inability of many practitioners to make a proper physical examination

of the ear. It would be well for such to read Dr. Burnett's comments on this subject with care.

The important subject of chronic catarrhal inflammation receives the very careful consideration which its great importance and frequent occurrence deserves.

The diverse nomenclature given it by different authors is justly criticised as not having any practical utility. Hence, the number of names applied to this disease, such as "nervous deafness," "hyphypertrophic," and proliferous inflammation, "sclerosis," and "chronic thickening of the mucous membrane of tympanum," etc., are rejected, because no one of them admits of universal application.

Chronic catarrh seems to the author the only universally applicable name. It is comprehensive, and surely serves to denominate the essential nature of the disease. He makes the distinction, however, of two chief forms, (*a*) the secretory or moist, and (*b*) the asecretory or dry form. An entire chapter is taken up with a minute account of the subjective and objective symptoms of the disease, which shows not only a thorough knowledge of the labors of others, but that the writer has also given the symptomatology of the disease a careful, personal study.

Another chapter is devoted to a consideration of the methods of treatment. A sharp distinction is to be made at the outset of the particular form of the disease, whether moist, or dry. We have read the chapter with care, and wish we could say that we have found anything new or more promising in the treatment of this discouraging disease, but alas we do not! Dr. Burnett favors the now pretty generally abandoned use of the nasal douche. He does not believe it so dangerous as it has been stated to be by many aurists, if used with proper precautions, and gives some additional rules of precaution to be observed.

The operation of removing the tonsils is regarded as only rarely necessary for the relief of deafness, for the latter is independent of their enlargement, and when they are removed they are often succeeded by an hypertrophy of the parts much larger than the tonsils.

Injections into the tympanic cavity are not regarded with favor. And this, we think, from our own experience, is sound. The author says few applications which are aimed at this cavity every reach it, and if they did, would probably do more harm than good.

An account of the literature of the operations upon the drum-head are given; and also the investigations of Bruner respecting the effects of electric currents upon the organ of hearing. A chapter is introduced for the consideration of unusual diseases of the middle ear. Some interesting observations relating to objective snapping noises in the ear, are given in this chapter with a number of references to various observations which

have been published on this subject. Primary cancer of the middle ear is a very rare disease. Dr. Burnett refers to all those which have been published. Acute and chronic purulent inflammation of the middle ear are considered in two chapters. The remarks upon treatment of acute inflammation are particularly worthy of commendation. The whole affair is summed up by the author himself when he says: "But simplicity of treatment, added to a careful and thorough diagnosis, are the best means with which to combat acute disease in the ear, as elsewhere."

It seems to us that an important point is made by the author, in regard to the way in which perforations in the drum-head sometimes close, by the formation of a kind of scab over the hole, then by true cicatricial tissue. The former falls off, leaving the latter as a permanent closure. He calls attention to the importance of favoring such a scabbing process, and the importance of letting them alone when they have closed the perforation in the membrana tympani. In the enumeration of the remedies to be used in checking the chronic discharge, zinc, silver, and alum are mentioned as the three most reliable ones. Nitrate of silver is useless, except in very strong solutions.

The course and consequences of unchecked chronic discharge are considered in a special chapter.

Those physicians who advocate letting alone such a purulent discharge from the ear should read the list of evils to which it tends to the production of, given by Burnett. 1. "Permanent hardness of hearing and deafness. 2. Epileptiform and other nervous manifestations. 3. Granulations and polypi in the ear. 4. Ulceration of the mucous membrane of the tympanic cavity, periostitis, ostitis; caries and necrosis of any or all parts of the temporal bones and portions of adjacent bones; inflammation of the meninges and sinuses of the brain; embolism, cerebral abscess, pyæmia, and death." Will any physician, with this list staring him in the face, say to the parents who bring him a child with otorrhœa, it is nothing—he will out-grow it.

In this chapter the indications for incising the periosteum over the mastoid region, and for trephining the mastoid process, are clearly elucidated, and at the end of the chapter we have a valuable biblography of the fatal cases from 1864 to 1876.

In the next section primary and secondary inflammations of the middle ear are studied in the first chapter, and morbid growths of the auditory in the second.

The latter chapter is a very interesting one, and besides a reference to the cases and observations of others, contains a very interesting and exceedingly well reported case observed by the author, of sarcoma of both auditory nerves, with the result of the autopsy and a microscopcal examination of both cochlea.

The last section contains a brief account of the methods of relief and education of deaf mutes and partially deaf children.

Dr. Burnett's book certainly deserves very high praise. It is the work of "a workman who needeth not to be ashamed." His style is clear and concise, without sacrificing anything to thoroughness. The tedious and frequent introduction of cases is avoided; those which are introduced always fit well in the text and serve a useful part in illustration and interest.

One of the most meritorious features in the book, however, is the case which has been given to the scientific part of the work, and the frequent evidence of originality of study and research.

The illustrations are good, and the general appearance of the book, like most of the work done by this publisher, is excellent.

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1. *Materia Medica*, for the use of students, by John B. Biddle, M.D., Prof. of Materia Medica, etc., in Jefferson Medical College. Eighth edition revised and enlarged, Philadelphia, 1878. Lindsay and Blakiston. $4.00

2. *The Action of Medicines*, by Isaac Ott, M.D., formerly Demonstrator of Experimental Physiology, University of Pennsylvania, Philadelphia, 1878. Lindsay and Blakiston.

3. *A Guide to Therapeutics and Materia Medica*, by Robert Farquharson, M D., (Edin.) Lecturer on Materia Medica at St. Mary's Hospital. Enlarged and adpated to the United States Pharmacopeia by Frank Woodbury, M.D., Philadelphia, 1877. Henry C. Lea.

4. *Modern Medical Therapeutics*, a compendium of recent formulæ, etc., by Geo. H. Napheys, A.M., M.D., and a companion volume.

5. *Modern Surgical Therapeutics*, a compendium of current formulæ, etc., by the same author, Philadelphia, 1878. D. G. Brinton, each cloth. 8vo. $4.00.

The above works, recently issued, are individually and collectively of great interest. Though published within a few months of each other, from the same city and upon the same subject, they are as dissimilar as the four quarters of the globe. At the first glance, chaos seems to have come again, if indeed it has ever uplifted its brooding wings from the realms of therapeutics. A closer survey, however, shows that their diversities are those of standpoint rather than of fact, and reminds us that there are several methods of treating disease now on trial, which are based upon three distinct theories. These are, first, the empirical or clinical plan; secondly, the physiological plan; and thirdly, a method which may provisionally be called the lay practice. In the first, the effect of a remedy and its uses are judged by the clinical experience of the profession. It indulges in no theories, being severely utilitarian. It asks no questions as to the modus operandi, but is simply content to know that those afflicted with certain diseases recover under certain remedies, and that the various secretions are particularly influenced by a particula

agent. Concerning many drugs this is for the present final. It is believed *semper, ubique et omnibus*, that castor oil in a given dose, purges. There may be opinions more or less valuable as to its manner of purgation, but no definite information beyond the bare fact. Quinine is in like manner universally admitted to cure agues. But the catholicity of the empirical system is sadly limited. Rheumatism is cured by everything and nothing. There is scarcely a disease for which some one has not a specific, which unfortunately is not as efficacious in other hands. This method is, in great part, the foundation of the regular practice of medicine, being a true eclecticism, appropriating whatever any one has found to be of value. Its utility is bounded only by the degree of that experience on which it relies. Borellus, for example, sets forth that sterility could be cured by a chaplet of wild horse mint worn *in loco*, but his experience was manifestly insufficient. The errors of the clinical plan are indeed largely of the past. The destinies of cundurango and sarsaparilla have been happily contrasted. The latter descends to us with many traditions of the elders concerning its alterative properties, having come into use gradually and largely by oral tradition. It has been weighed and found wanting by each one individually, while its virtues are still a record to beguile others. The former was announced in the days of steam, and journalism, and telegraphy. It was tried simultaneously throughout the world, and as promptly rejected. Had it come upon the stage a hundred years ago, there would have been text-books still extant, recording the cure of the eminent mother-in-law, and saying nothing of the speedy return of her cancer.

The second or physiological method goes further and is more exacting. It inquires of every drug what manner of disturbance it is capable of exciting if admitted to the body. Has it a special action on the muscular, or arterial, or the nervous system? Does it contract or dilate capillaries, stimulate or benumb nerve centers, and so on? Before one can ask these questions, they must know thoroughly the natural workings of the human mechanism, and hence the physiological system finds its advocates among the better educated of the profession. Further, if a drug has been found clinically useful in any disease, this method endeavors to find out why it has been of service, and by such researches it happens sometimes that the nature of the disease and its cure are alike demonstrated, and in a wider sense than its author knew of *Morbum curationes ostendant.*

This plan of inquiry is of modern origin. It was born with this century in the midst of bastard systems which for the most part live at a poor dying rate while this one waxes strong. Of those which saw the light about the same time the most formidable was, and is, Homœpathy, and because of its very likeness to the truth. The system of provings if complete and compared with tests upon animals is much the same. But

although its resemblance to truth deceives the very elect; like the beast in the vision its wonders are lying wonders. There is some difference between the results of a well conducted physiological experiment and Hahnemann's insane twaddle of ascribing "much thirst for beer" to an infinitesimal dose of petroleum taken weeks before, (and this too in a German). The physiological method has found out for us many things, and is indeed, the road to progress. It has many difficulties to encounter, not only in the nature of its researches, but in making a beginning. To prosecute the study of the action of medicines requires the conjunction of two things rarely associated: subjectively, acute perceptions and accurate judgment; objectively, ample time and means to carry out the designs; in a word, brains and money in the same individual. Again, there is a *vis a tergo*, a stab in the back, to be averted. The Woman's Branch of the Society for the Prevention of Cruelty to Animals, "with malice aforethought, and instigated by the devil," are always upon the alert to prosecute penally the prosecutor of scientific investigations. Neither do all of the profession take to it kindly because it requires some study, which many avoid as causing weariness of the flesh. Between the clinical and physiological systems there is no quarrel, but on the contrary, they bear each other's burdens and supply each other's deficiencies. Neither is the latter complete enough to stand alone. It is but a hand heard of Hygeia and not the goddess herself.

The third method is the one in vogue among the laity, though with little attention adopted by many physicians. The laity promulgate it through ignorance, the innate quack finds it in a more respectable "lay", than burglary and pocket picking. Let us ring up the curtain for a minute and see what it is like.

SCENE I. A boudoir. Motto framed upon the wall (or should be) from St. Paul—"And withal they learn to be idle, wandering about from house to house; and not only idle, but tattlers also, and busybodies, speaking things which they ought not." On a lounge Mrs. A., *en deshabille.* Seated, Mrs. B., *en promenade.*

Mrs. B., (*loquitur*).—"Why, my dear, how awfully you are looking!"

Mrs. A.(*volubly*).—"Oh, you don't know what terribly excruciating pains I have in my back, and I have n't slept night or day for weeks, and Mrs. C. was saying only the other day that she did not see how I could bear up, but it is so dreadful, you know, to be an invalid, that I can't really make up my mind to be sick."

Mrs. B—"Oh, my dear, how foolish to let it run on so, and besides there's nothing going on next week, and you might just as well take time to be cured. Stop, here's just the thing; I have it in my pocket. A pre-

scription by Dr. G. I got it from Mrs. E., and you know how dreadfully she suffered, poor woman, from hm. hm. hm."

Mrs. A. (musingly.)—"Do you think I have the same thing, my love?"

Mrs. B.—"There's no doubt of it. Same symptoms, precisely. And then you know if it don't do you any good you can call on Dr. G., lovely man, isn't he, and ask him why it didn't help you." (*Exeunt omnes*, as far as the door-step, for a long farewell.)

SCENE II. *A drug store.* The clerk, æt. 16, alone, looking over the prescription files. Enter Dr. Corvus, rather seedy.

Dr. C.—"How's business? Slow? Did you get that prescription of mine for cotton-root and tansy?"

Clerk.—"No, guess it went across the way. Sit down. Here's one we sell lots of." (Reads):

No. 1067—℞. Acidi Arseniosi.
Strychniæ Sulphatis *aa*, gr. 1-35.
Extracti Beleeadonnæ, gr. 1-5.
Cinchonæ Sulphatis, gr. jss.
Pilulæ Ferri Carbonatis gr. ijss.
Acaciæ,
Syrupi *aa*, v. s.
M. For one pill.

Dr. C.—"What's it for?"

Clerk.—"Damfino. Brought in generally by high-toned women. They hand it around among themselves. Just put some up for Mrs. A."

Dr. C.—"Ha! I see, 'constitutional uterine disease.' I'll take a note of it. What is that other long one?"

Clerk.—(Reads):

No 778. Magnesiæ Sulphatis, ʒvj.
Magnesiæ Carbonatis, ʒjss.
Vini Alœs, fʒvj.
Tinctura Humuli, fʒij.
Acidi Hydrocyanici diluti M, xv.
Infusi Cascarillæ, fʒvij.
M. A tablespoonful thrice daily.

Dr. C.—"Who brings in that one?"

Clerk.—"Preachers, mostly, and editors."

Dr. C.—"It must be for dyspepsia. I'll take a note of it, too. It's written by a man of great reputation. (*Clerk retires to wait upon a customer.*) A thought strikes me. Here are many prescriptions, written by all kinds of doctors. I will collect them; label one 'for pleurisy,' another 'for worms.' If carried out to any extent one might write quite a book.

Think of all the drug stores in the United States. Ha! ha! in the world! Eureka!!"

SCENE III. An undertaker's private residence. The family at tea. Room furnished in Eastlake style—great luxury evident on all sides.

Mater familias.—"Hubby, what did Mrs. A. die of?"

Pater familias.—"Pneumonia, the doctor said."

Mater.—"I wonder if he knew what was the matter?"

Pater.—"I'm sure I don't know, but she must have been treated properly for the doctor told me she was taking Prof. D's. prescription for pneumonia all the time she was sick."

Mater.—"I think he might have sense enough to write one of his own."

Peter.—"Pshaw, Maria, don't quarrel with your bread and butter!" (*Curtain falls.*)

The drama from which these scenes are taken is one which is enacted every day. It suggests the need of some advance in intellectual development in those who take drugs as well as in those who prescribe them. The profession is crowded and cursed with many men who are incapable of either accurate diagnosis or scientific treatment, but if some one will tell them, or they can guess what ailment the patient labors under, they turn to its title in a book of formulæ, and prescribe accordingly. Polypharmacy or "shot-gun" prescribing is their delight. This was allowable in the twilight of medical art. Our ancestors brewed many draughts not unlike the contents of the witches' caldron. It is time for this to pass away, and for a rational giving of drugs to take its place—when one shall consider not the reputation of him who first recommended the remedy, and the state of the moon and planets when it was compounded, but the state of the patient, and the ability of the drug to change it in any way, with the reasons therefor, if attainable. The first or clinical method is well represented in this group of books. Biddle's Materia Medica is a classical work now in its eighth edition. It contains nothing new or original, being simply an abridgment of the United States Dispensatory, but it is a most useful abridgment, leaving out much rubbish, and bringing the necessary information within small compass, and reasonable price. For these reasons it has always been a popular text-book, and always will be, since its facts are not subject to much change except to be added to. Since one does not gather figs from thistles, so we must always turn to the papaver for opium, and to the strychnos for nux vomica, as therein described. So also, castor oil, ipecac, and cantharis will purge, sweat, and blister *in seculum seculorum*, in the doses or preparations therein set forth. And no one can describe all this more succinctly or plainly than its general author. Long may he revise and enlarge it as novelties call for the process.

The second book, by Dr. Isaac Ott, is an equally good exponent of the physiological method. Although an abridgment to some extent of larger works, like the preceding, it contains the record of much original work beside. It has also a novel feature in that, it takes us behind the scenes and shows us the physiologist at work; sometimes with startling effect, as when he remarks (p. 61), "Here you take a cat," etc., from which we beg to be excused. Not satisfied with this, on the next leaf he generously raises his previous offer to, "Here take two cats." Never! Verbal eccentricities are, however, of slight moment. The book puts any bright student in the way of continuing investigations on the action of medicines, showing him what is needed in the way of apparatus and pointing out the proper lines of research. It gives in detail the action, both on animals and man, of the principal drugs, which enables the reader to know rather than guess at what he is doing in prescribing them. As a necessary result, perhaps, of brevity, some things are omitted which one would like to have seen elucidated; for instance, the effect of the bromide of potassa upon the cerebral circulation. It is stated, however, to produce a drowsy feeling with diminution of arterial tonsion; and, therefore, may be inferred to diminish the amount of blood in the brain as is usually supposed. The statement, on page 148, that morphia has no effect upon pigeons, ducks, and chickens, is not true, but they require very large doses comparatively, as was shown in some experiments of Dr. S. Weir Mitchell, published in the *American Journal of the Medical Sciences*, in 1869. A useful addition for the investigator is a bibliography attached to each drug of importance. It is only intended for people who think; and is, therefore, "caviar to the general." If there were no way of learning the use of electricity than by study of such jargon as "*anelectrotonus*" and "*katelectronus*," we would say, happily so. Nevertheless, every advanced student should have a copy and study it. It will do good in proportion to its circulation. The Women's Branch of the Society for the Prevention of Cruelty to Animal swill regard it with speechless horror, but good men and angels will rejoice in it as an evidence of progress.

3. Dr. Farquharson's book is an attempt to wed the clinical and physiological, and also to confine them within narrow limits. As stated by himself, his aim is "to present the subject in briefer compass, in perhaps, more systematic form and unencumbered by any botanical or pharmaceutical details." The systematic form is secured by arranging in opposite columns the physiological and therapeutical uses of the principal drugs. As for the rest, the book has met with an accident. It has been "adapted to the wants of the American student" by adding botanical details and various suggestions of the translator. Why it should be necessary to translate English books into American is not evident to inferior intellects.

It is nearly time to discourage piracy in literature by refraining from the purchase of stolen goods. If we cannot have an international copyright law, we may, at least, have a public opinion as strong as law; and it is the duty of every one who recognizes the injustice of this practice to avoid becoming accessory after the fact. Otherwise, the book can be recommended as a useful compendium, not as valuable as the joint possession of the two preceding books, but entitled to a place in literature.

Would that one could stop here, but "Modern Therapeutics," No. 4, demand a notice. They may be briefly classified as irredeemably vicious in tendency and an embodiment of the lay system of practice. They are a mere compilation of formula, the fruit of ransacked prescription files. Any drug clerk may be an author of this kind. Some of the formulæ are obtained from the writings of physicians. But when did Dr. Da Costa, for instance, ever authorize the statement that suppositories of the extract of opium and acetate of lead were "good for consumption?" Because a physician finds occasion to give a remedy to control a temporary symptom in a given patient, must he be heralded as recommending it in all cases of the disease? Yes, if Dr. Corvus by any chance gets hold of the prescription, that being the basis of these remarkable books. Unfortunately, the victims of this practice have no redress. Where the formula is published and acknowledged by the original prescriber, one need waste no sympathy, the practice is much the same; and they appear to be proud of their elaborate compounds. There are enough of such recommenders of polypharmacy to make a very large volume, leaving out of view those whose prescriptions have been mysteriously obtained, but, of course, 'honestly.' The former are bold in their own defense. Here is richness:

No. 443—℞. Extracti Ergotæ fluidi, f℥ij.
Tincturæ Digitalis, f℥ij.
Acidi Gallici, ℥j.
Magnesii Sulphatis, ℥v.
Acidi Sulphurici diluti, f℥j.
Infusi Rosæ compositæ, f℥vj.

M. Two tablespoonfuls every three hours, until the hemorrhage is arrested.

"In spite of the fashionable outcry against complicated prescriptions, Dr. Dobell recommends the above as the most rational combination of remedies for a case of *profuse* tubercular pulmonary hemorrhage." * * * "The object of the ergot is to contract the vessels; of the digitalis to steady the heart; of the gallic acid to clot the blood; of the Epsom salts to relieve the congestion; and of the dilute sulphuric acid to assist the rest." This might be called the burlesque physiological method. Every drug is carefully assigned its station, except the numerous ingredi-

ents of the compound rose infusion; and none are unduly complimented, although digitalis is the only one present in sufficient amount to have much effect. *Per contra*, a single remedy sometimes gets undeserved praise, for example: "Colchicum is recommended in acute stages of gouty bronchitis, by Dr. Greenhow, who gives the following with great success:"

℞. Potassii Iodidi.
Ammoni Carbonatis, *a a*, gr. iv.
Vini Colchici, min. x
Tincturæ Scillæ.
Tincturæ Hyoscyami, *a a*, min. x x.
Aquæ Camphoræ, q. s.

M. Make a draught to be taken thrice daily.

An intolerable amount of sack for a pennyworth of bread. And the q. s., what shall suffice? But it is not fair to criticise individual prescriptions, because they happen to be waylaid in these books. On page 33 of the Surgical Therapeutics is a statement which gives in epitome the essence of this method of practice. "Digitalis in large doses, used at the commencement of acute inflammations is said often to cut them short * * Used as a depressant, Prof. S. D. Gross says he has lost confidence in it." Such losses of confidence (let us hope it was not mutual) are hardly as valuable guides to practice as the direct observation of the physiological worker. On this very point we may contrast an analogous statement in Dr. Ott's work (p. 110), where it is recorded that Dr. J. M. Murray "found that after the administration of digitalis you can administer ten times the lethal dose of aconite and then you are unable to completely arrest the heart." This is more definite than the foregoing specimen of medical Jenkinism. In the article on epilepsy, fifty-three drugs are mentioned, after which the emetics, sedatives, and stimulants are suggested. Then follows ten external remedies. This is evidently the doctor who could cure anything if he could first throw the patient into fits. The owner of these books is also armed cap-a-pie against asthma, for which fifty-one remedies are suggested, with cold bathing thrown in. Then follows a list of external remedies, from which we infer that the bathing is to be inwardly applied. In fact we read, "simple sponging the body is preferred by some to immersion"—and from this it is but a step to inward affusion. Phthisis has only a beggarly array of forty-seven remedies for the general condition, but then each symptom has a separate list of cures; thus, the vomiting is cured by nux vomica, the anemia by the iodide iron, and so on *ad nauseam*. In pathology the author is superb.

Thus, in phthisis, under the head of tannic acid, we read, "the value of such an influence should not be underrated, for it is in the highest degree probable that the extension of tuberculous deposits is preceded by a congested state of the pulmonary parenchyma, and that by restoring the latter we may prevent the former"—naturally. In the article on paralysis we learn that "leeches at the verge of the arms are beneficial, where there is suppression of a habitual discharge, as from piles." Piles of what? Of paralysis? It is, however, needless to expatiate further on this topic. The "modern therapeutics" are so only in name—but those who know only a little physic will buy them eagerly and flourish the formulæ of great physicians in the face of disease in spite of all that can be said. And 'the human race will get along very well no matter how it is physicked 'Sir," replied Dr. Slop, "it would astonish you to know what improvements we have made of late years in all branches of obstetrical knowledge, but particularly in that one single point of the safe and expeditious extraction of the fœtus, which has received such lights, that for my part (holding up his hands) I declare, I wonder how the world has—" "I wish," quoth my Uncle Toby, "you had seen what prodigious armies we had in Flanders."

The Science and art of Surgery, being a Treatise on Surgical Inquiries, Diseases and Operations. By JOHN ERIC ERICHSEN, F. R. S., etc., etc. Revised by the author, from the Seventh and Enlarged English Edition. 2 vols. Philadelphia: Henry C. Lea. 1878.

We welcome with great pleasure this new edition of the best English text-book on Surgery, which has been many years before the profession, and has been constantly growing in popularity, both at home and abroad. It is indeed a noble work, to praise which would be to "paint the lilly, or gild refined gold," long may its distinguished author live to adorn the profession, and enjoy the just rewards of his learning, talent and industry. The new edition is fully up to the surgery of the day. Everything that has any claim to be considered a real improvement in surgery receives due notice, and some things even that are rather novelties than assured improvements. We believe that nowhere so well as in the compass of these two volumes can so complete a representation of the state of modern surgery be found. Esmarch's method of bloodless operating, Lister's antiseptic treatment of wounds and similar recent additions to surgical practice receive a due notice and just appreciation. As a specimen of the thoroughness which pervades the work we may mention, that there is a complete table of the operations of ligature of arteries for the cure of elephantiasis as far as known. The style is that of a master, the mechanical execution is perfect, it is an indispensable work to every one in any way engaged in the practice of surgery.

XUM

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK,

SESSIONS OF 1877-78.

THE COLLEGIATE YEAR in this Institution embraces a preliminary Autumnal Term, the Regular Winter Session, and a Spring Session.

THE PRELIMINARY AUTUMNAL TERM for 1877-1878 will open on Wednesday September 19, 1877, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students expecting to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term, clinical and didactic lectures will be given in precisely the same number and order as in the Regular Session.*

THE REGULAR SESSION will begin on Wednesday, October 3, 1877, and end about the 1st of March, 1878.

FACULTY.

ISAAC E. TAYLOR, M. D.,
Emeritus Professor of Obstetrics and Diseases of Women, and President of the Faculty.

JAMES R. WOOD, M. D., LL. D.,
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A. A. SMITH, M. D.,
Lecturer Adjunct upon Clinical Medicine.

A distinctive feature of the method of instruction in this College is the union of clinical and didactic teaching. All the lectures are given within the Hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction.

The Spring Session consists chiefly of Recitations from text-books. This term continues from the first of March to the first of June. During this Session, daily recitations in all the departments are held by a corps of examiners appointed by the regular Faculty. Regular clinics are also given in the Hospital and in the College building.

FEES FOR THE REGULAR SESSION.

Fees for Tickets to all the Lectures during the preliminary and Regular Term, including Clinical Lectures	$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

FEES FOR THE SPRING SESSION.

Matriculation (Ticket good for the following Winter)	$5 00
Recitations, Clinics, and Lectures	35 00
Dissection (Ticket good for the following Winter)	10 00

Students who have attended two full Winter courses of lectures may be examined at the end of their second course upon Materia Medica, Physiology, Anatomy, and Chemistry, and if successful, they will be examined at the end of their third course upon Practice of Medicine, Surgery, and Obstetrics only.

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Prof. AUSTIN FLINT, Jr., Secretary, Bellevue Hospital Medical College.

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MEDICAL DEPARTMENT, BURLINGTON, VT.

TWENTY-FIFTH SESSION, 1878.

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WALTER CARPENTER, M.D., Burlington, Vt., Professor of the Theory and Practice of Medicine; Physician in Chief to Mary Fletcher Hospital.
JOHN ORDRONAUX, M.D., LL.D., New York City, Emeritus Professor of Medical Jurisprudence.
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GEORGE S. SMYTH, Ph.D., University Professor of Chemistry and Toxicology.

PROFESSORS OF SPECIAL SUBJECTS.

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ROBERT W. TAYLOR, M.D., New York City, Professor of Diseases of the Skin.
A. P. GRINNELL, M.D., Burlington, Vt., Professor of Diseases of the Heart and Lungs; Attending Physician to Mary Fletcher Hospital.
STEPHEN M. ROBERTS, M.D., New York City, Professor of Diseases of Children.
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EDWARD S. PECK, A.M., M.D., Burlington, Vt., Professor of Diseases of the Eye and Ear.
LEROY M. BINGHAM, M.D., Burlington, Vt., Demonstrator of Anatomy; Attending Surgeon to Mary Fletcher Hospital.

This Medical College is situated near the University buildings, and upon an eminence overlooking the city of Burlington, Lake Champlain, and the Adirondack chain of Mountains.

HOSPITAL ADVANTAGES. The Mary Fletcher Hospital, now in progress of erection, will probably be ready to receive patients before the next regular session.

Clinical instruction in Medicine, Obstetrics, and Surgery, will be given during the regular course of lectures, by the Professors of the Medical Department of the University.

THE REGULAR WINTER SESSION will commence on the first Thursday of March, 1878, and continue sixteen weeks. This course will consist of from five to six Lectures daily, in the various Departments of Medicine and Surgery.

CLINIQUES. Besides these Lectures, there will be Cliniques held as follows:

SURGICAL CLINIQUE, by Prof. Little, every Saturday, from 9 to 12, during the last half of the session.

MEDICAL CLINIQUE, by Prof. Carpenter on Wednesday morning, during the first half of the term.

CLINIQUE FOR DISEASES OF THE EYE AND EAR, by Prof. Roosa, once a week during his course of Lectures.

CLINIQUE FOR DISEASES OF SKIN, by Prof. Taylor, once a week during his course.

CLINIQUE FOR DISEASES OF CHILDREN, by Prof. Roberts.

CLINIQUE FOR DISEASE OF NERVOUS SYSTEM, by Prof. Hammond, during his course.

FEES FOR THE REGULAR SESSION.

Matriculation Fee, Payable each Term	$5 00
Fees for the full Course of Lectures by all the Professors	70 00
Graduation Fee	25 00

Material for dissection will be furnished at cost.

The tickets are to be taken at the beginning of the Session.

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The REGULAR TERM will open March 5, 1878, and close the last week in June following.

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